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\*Illustrated.

WE publish elsewhere an abstract of a recent article by J. O. Fagan dealing with the labor situation on railroads, and especially with the activities of the legislative representatives of the brotherhoods in promoting train crew and other legislation. Mr. Fagan paints his pictures in broad, long strokes, and therefore they are not always accurate in details. His comments on labor unions sound like criticisms of the unions themselves rather than of objectionable things done by them. The organization of working men is necessary under modern conditions for them to protect and promote their legitimate interests. The trouble with them is that they often seek to promote illegitimate ends or use illegitimate means to promote legitimate ends. Mr. Fagan is also somewhat too severe on public regulation in general, and regulation by the Interstate Commerce Commission in

particular. Some regulation of operation is as necessary as some regulation of rates. Since some regulation of operation is necessary, the best body to which to delegate the necessary authority is the Interstate Commerce Commission. The commission often makes mistakes and is sometimes unfair, but it makes few mistakes and is very fair compared with most regulating bodies in this country. However, in its broad outlines the picture Mr. Fagan paints is true to life. It faithfully depicts the power the railway labor brotherhoods have acquired, the ruthless way that power is abused and the public's foolish and harmful attitude of acquiescence in almost everything the brotherhoods demand. However, a change is bound to come. A few years ago the captains of industry were the heroes of every newspaper and magazine writer in the country. Today there is none so low as to do obeisance to a captain of industry. Many of them abused their power, and therefore lost it. The labor leaders are riding for a similar fall. The people of the United States will not indefinitely tolerate the tyranny of labor any more than they will indefinitely tolerate the tyranny of capital.

THERE has been a good deal in the papers in this country and a good deal more in the French papers in criticism of the sale of about \$3,000,000 St. Louis & San Francisco bonds through Speyer & Co. to French bankers only a comparatively short time before the St. Louis & San Francisco went into the hands of a receiver. The facts of the case are substantially these: Speyer & Co., in buying the bonds from the railroad company, were under no illusion whatsoever as to the financial condition and future requirements of the property. In reselling the bonds to the large French bankers, they were entirely frank in their representations, and it is safe to say that these bankers and the large investors who bought from the French bankers were fully cognizant of the financial condition of the St. Louis & San Francisco. The American bankers sold the bonds to the French bankers at a very small margin of profit, less than 1 per cent. The French bankers, knowing all the time the exact status of the bonds, sold them to their customers at a profit it is safe to say of over 10 per cent. If any one was not made aware of the risk taken in buying these bonds, it was the small customer of the French bankers. It would seem, therefore, that it is disingenuous, to say the least, for the French bankers to allow the blame for any risk which their customers have unwittingly taken to rest either on American railroads or on American railroad bankers.

IT is interesting sometimes to see just how "new" are some of the problems which those whose duty it is to regulate the operation of railroads are now for the first time confronted with. The latest tentative classification of operating expenses promulgated by the Interstate Commerce Commission provides for an optional charge for depreciation for each one of the material accounts in maintenance of way and structures. Thus Rails includes the cost of material and has the optional further account Rails, Depreciation of. In the 10th annual report of the Little Miami Railroad, abstracts from which are printed elsewhere, which is for the year 1852, the superintendent, W. H. Clement, had occasion to remark:

The current expenses have been 40 per cent. of the gross receipts, which varies but slightly from last year's results, but we have not, I think, fully provided for depreciation of iron, although perhaps not 20 bars are so worn as to require rerolling, yet a general wear of the surface is going on which in time must absorb the value of the iron. The ties are also decaying, although as yet requiring no renewals. I would suggest the propriety of purchasing iron or of setting aside a fund to purchase it when needed.

Mr. Clement was a practical railroad man and did not deal in theories of railroad accounting. The Interstate Commerce Commission's depreciation "charges" under maintenance of way as now proposed, and under maintenance of equipment, which have been in effect since 1907, are bookkeeping charges only. No actual fund either of money or materials is required. Mr. Clement seems to have been quite unaware that there could be a distinction between a charge for depreciation and an actual

provision for it, and in this opinion he would probably be upheld by a good many practical railroad officers even today.

THE Supreme Court of the United States, in one of the decisions handed down last Monday, annuls an order which was issued by the Interstate Commerce Commission regulating the fare on an electric car line between Council Bluffs, Iowa, and Omaha, Nebraska, holding that, in the law which gives the commission its power, Congress used the term "railroad" in a restricted sense and did not mean to include "local" lines, such as street railroads. In other words, a street car line is not subject to the interstate commerce law, even when it crosses a state line and even when, as in the present case, it runs a part of the way on its own ground, moving cars at high speeds, and is virtually an interurban line, though not a long one. But, surely, such traffic is commerce, and it is interstate; and this decision, like that in the Minnesota rate case, delivered on the same day, seems likely to be notable for the importance of some of the points which it does not decide. The separation of roads, made of steel rails, into three classes, street railways, interurbans and "railroads" has caused much confusion for a dozen years past, and the full text of the present decision will be awaited with interest, for it is time that the questions were settled. Evidently the Supreme Court believes that the duty of settling it, so far as it affects interstate commerce, rests on Congress. As the decision at best will be based on arbitrary grounds, this view has a rational basis. It cannot be assumed that Congress would exclude a street railway on the ground that it is a small affair, for in the District of Columbia it has had no scruples against putting street railroads under the authority of the Interstate Commerce Commission, and has even passed acts directing the commission to take cognizance of the most petty details of car operation; so unless the attitude of congressmen has changed it does not seem likely that they will hesitate to pass a law backing up the commission in the position which it has taken in the Council Bluffs case. That case, decided November 27, 1909, and reported in the Reports, Volume 17, page 239, contains a very full statement of the reasons for and against the different uses of the term railroad and railway, many decisions being cited on both sides of the question of the meaning of "railroad" as used in federal statutes. The commission has for many years held that the term includes electric lines. The Circuit Court took the opposite view, at least so far as to grant an injunction against the commission; and then the Commerce Court (May, 1911.) sustained the commission. Judge Knapp, however, when on the commission dissented, and as a member of the Commerce Court he took no part in the case. The Supreme Court, therefore, has settled numerous delicate distinctions.

#### THE DECISION IN THE MINNESOTA CASE.

THE first feeling of railway men regarding the Supreme Court's decision in the Minnesota rate case will be one of disappointment. Some of the principal contentions of the expert witnesses and counsel of the railways are emphatically negated. A closer reading of the opinion may turn this feeling of disappointment into one approaching satisfaction. Several of the principles the railways sought to have established are not upheld. But no principles are established by the decision which in the long run probably can do the roads unjust harm. On the contrary, some of the views expressed are an advance over any uttered by the Supreme Court in any previous case.

There were two vitally important questions involved. One related to the power of the states to regulate rates for hauls beginning and ending within their own border. The other related to the basis on which valuations of railways should be made. As to the first, the railways contended that the power of Congress over interstate commerce was paramount; that Congress by the passage of the Act to Regulate Commerce had asserted its paramount authority; and that therefore any regulation of rates by the states which directly or indirectly interfered with interstate rates was unconstitutional. The state of Minnesota con-

tended, on the other hand, that the states had practically the same power to regulate state rates that Congress had to regulate interstate rates. The Supreme Court holds that under the interstate commerce act as it now stands, the states have full power to regulate intrastate rates, so long as they do not make them confiscatory. But by clear implication it says that the power of Congress over interstate commerce is so completely paramount that it may determine whether any regulation of state rates does unduly interfere with interstate rates, and "may intervene at its discretion for the complete and effective government of that which has been committed to its care." It holds, not that Congress has not the power over state regulation which counsel for the railways have attributed to it, but merely that Congress has not exercised the power. "If this authority of the state (to regulate intrastate rates) be restricted, it must be by virtue of the actual exercise of federal control and not by reason merely of a dormant federal power, that is, one which has not been exerted." The power of Congress in the premises could hardly be more clearly and broadly stated than in the following sentences:

The interblending of operations in the conduct of interstate and local business by interstate carriers, and the exigencies that are said to arise with respect to the maintenance of interstate rates by reason of their relation to intrastate rates, are considerations for the practical judgment of Congress. If the situation has become such that adequate regulation of interstate rates cannot be maintained without imposing requirements with respect to such intrastate rates of interstate carriers as substantially affect interstate rates, it is for Congress to determine, within the limits of its constitutional authority over interstate commerce and its instruments, the measure of the regulation it should supply.

By this decision the determination of the extent to which the activities of the states in regulating rates should be restricted is found to lie not with the courts but with the people and Congress. Fortunately, there has been for some years a growing recognition of the fact that regulation of railways is a national problem, and that therefore its solution should be left to national action. Therefore it may not be impracticable to secure action by Congress to keep the regulatory activities of the states within reasonable bounds.

The court's attitude toward some of the important points involved in the determination of whether rates are confiscatory is less clear. It repeats its familiar proposition that "the basis of calculation is the fair value of the property used for the convenience of the public." It adds that the ascertainment of that value is "not a matter of formulas, but there must be a reasonable judgment having its basis in a proper consideration of all relevant facts." One of the most warmly debated and most important points regarding railway valuation for rate-making is how land used for right-of-way and terminals should be appraised. Three views have been advanced. Some have contended that land should be appraised at its original cost to the railway. The Minnesota commission, in the valuation on which it based certain of the rates involved in this litigation, held that the proper basis for appraising land used for railway purposes was its present market value. A third view, and the one pressed by the railways in this case, has been that land used for railway purposes should be appraised at what it probably would cost now to acquire it for railway purposes. Experience shows that the cost of acquisition for railway purposes is from 50 per cent. to 1,000 per cent. more than the ordinary market value. The court apparently accepts the view of the Minnesota commission that the correct basis of appraisal is the present market value. The ruling is important. While it does not uphold the railway position, it puts a quietus on the contention that railways are not entitled to benefit by the increment in the value of their real estate.

Another important point decided is that the valuation of the various elements of the property, such as rails, ties, bridges, and so on, should not be based on their cost of reproduction new, but that an allowance should be made for their depreciation after they have been in service and actually have suffered depreciation. It is difficult to escape the conclusion that where depreciation



has actually occurred, it should be allowed for, just as appreciation should be considered where it has taken place.

Both those who have attacked railways and those who have defended them have sometimes taken extreme ground. The Supreme Court has rejected the extreme contention of both and taken middle ground on almost every proposition. While it held that the Great Northern and Northern Pacific had not proved that the rates in question were confiscatory as applied to them, it did not hold as to them that the rates were not confiscatory, and it did find that they were confiscatory as applied to the Minneapolis & St. Louis. As a practical matter, much difficulty and embarrassment are likely to be experienced in applying some of the principles laid down. For example, the Minneapolis & St. Louis, as to which it says the rates are confiscatory, competes at a good many points with the other roads involved, as to which the rates are held to be not confiscatory. The court apparently gives no clue to its idea as to what should be done about rates between competitive points which are on its own findings confiscatory as to some of the competitors, but not as to others. If the latter reduce them, so also must the former, or lose the traffic moved on them.

On the whole, it is probable that when the decision is thoroughly analyzed, it will be found to have advanced the problem of regulation of rates toward a solution which will not be destructive of the rights and interests of railways and which will at the same time be satisfactory to the public. Furthermore, it should always be borne in mind that the courts fix only the minimum below which rates cannot constitutionally be reduced, and that the law makers and public always have it within their power to keep them as much above the limit of confiscation as consideration of the public interests may indicate that they should be kept.

#### PERFORMANCE OF AUTOMATIC BLOCK SIGNALS.

THE records of the performance of automatic block signals given in this issue of the *Railway Age Gazette*, and in the issue of February 21, contain information of a kind never before published, except in a fragmentary fashion. To railway officers familiar with the operations of the signal department most of the facts given are already familiar, but the information will be found to have interest for these, as well as for others. Automatic block signals now fill an important place in American railroad operation, and the merits of the system, as a means both of economy and of safety, while in a general way well appreciated, are still far too little understood.

The records which we print may be taken as typical in what they show of American practice. Automatic signals depend for their serviceableness on delicate apparatus, requiring the care of well-trained men; and the perfection which is manifest today is the result of a long, slow and costly growth. Bearing in mind this fact, it is matter for decided satisfaction to be able to say that the salient fact observable in reviewing the data which have been gathered in the preparation of these articles is that on American railroads generally the signal system is managed with a high degree of efficiency. The signal apparatus is not perfect, and in the personnel there is room for improvement; but the percentage of faults and failures is exceedingly small; so small, indeed, that, in a sense, the officers in charge have got beyond questions of percentages. One careful and experienced signal engineer, being asked about the percentages of his records, and answering in a way which indicated that he had not compared the records of the different divisions of the road in much detail, explained his position by saying that it was his practice to seek a cure for every individual fault discovered. In other words, his aim is to have the signals operate perfectly, and the fact that there are two faults on one division and one fault, or three faults, on another, is immaterial; all must be attacked. The only standard that can be set up as a goal is theoretical perfection; for any empirical comparison, by records of the past,

leads the statistician into such infinitesimal percentages that the mathematical criterion proves worthless. The percentage of dangerous failures is already exceedingly small, but it is to be borne in mind that a single such failure involves the possibilities of results so disastrous that no design of apparatus, quality of moral character, or efficiency of inspection can be deemed satisfactory unless and until it is as good as it is possible to make it.

Another salient fact is the value of records. The fact that statistical comparisons are not so useful as might be desired does not mean that records are useless. They are well worth keeping. Roads which keep partial or imperfect records may not be directly impairing efficiency, but they are neglecting a means of efficiency which is recognized as essential in all matters where the maintenance of high standards is considered necessary. Even if perfection were attained, it would still be desirable to keep on record the affirmative detail evidence of the fact. As long as the service anywhere is anything less than perfect, the records are of some use—at least as a definite premise for comparing the results with the results in former years. Records are necessary for establishing standards of efficiency and for use in correcting neglect or misconduct. The high degree of efficiency of which we have spoken is general, but it would not be safe to say that it is universal. And statistics have a value in spite of the fact that circumstances on one railroad are often so different from those on another that in many elements of the service a satisfactory comparison is out of the question.

Records are especially valuable for measuring the relative efficiency of different kinds of apparatus. The signaling art is still in comparative infancy and is to a considerable extent experimental. Designers and manufacturers have constantly been bringing out new patterns and introducing new principles, while yet their existing apparatus was giving a very good degree of satisfaction and could not be discarded. Though not dangerous, it does keep down the efficiency record; and records should be frequently compared for the purpose of keeping track of the degree of such inefficiency and of the rapidity with which its cause is being eliminated.

Records of signal performance being desirable, the need of uniformity in the records is obvious, and it is to be hoped that the Railway Signal Association will soon agree on a standard to which all railroads can conform. This standard should embrace all features which are essential in an exhibit of efficiency, and also all that are of interest, even though not classed as essential, in so far as they can be included without detriment to the interest of any road and without imposing burdensome labor. In the gathering of material for records, the process, as described in connection with the Baltimore & Ohio—the functions of the engineman, the station telegrapher, the despatcher, and so on—is essentially the same on all the principal roads, except that on some of them it is believed unnecessary to have printed blank forms below the signal supervisor's office. In the final summary record, for a month or a year, uniform arrangement of facts should be considered a fundamental requirement. A number of roads have forms which might readily be adopted, with slight modification, as standards, if only a concerted effort were made to that end. The signal engineer, as a matter of course, should see that adequate measures are taken for the removal of all causes of signal failures, regardless of any minute comparisons with the records of the past; but no one will deny the value of some record, and the criticism of showing too much detail, if it lies against these forms, is one easily met; the discussion of a proper form should begin with one which is too full rather than the opposite.

American railway signal departments may be generally credited with having apparatus, fixtures and appliances of satisfactory design and manufacture. Wherever the kind or quality of any piece or class of material or any mechanism is in any degree deficient, the officers in charge, cognizant of the conditions, will usually be found to be doing whatever is required in the matter of care and maintenance, and to be taking such action, looking

toward replacement, as judicious management demands. To state the case in extreme language, by careful management good service is secured from material not the best. It must be added that in some cases good material gives good service in spite of maintenance seemingly negligent in some respects.

Taking a broad view, it may be said that the signal engineers of the railroads of this country universally aim to establish high standards and to adhere to them. Perhaps the most serious fault among them is delay in effecting improvements which are known to be essential to a satisfactory standard of efficiency. Apparatus which ought to be replaced by improved designs is in some cases tolerated apparently because the danger due to its retention is small. Maintainers not of the highest character for skill and reliability are retained because to secure better men involves a long course of selection and training and, presumably, the payment of higher wages. We speak primarily of the signal engineer, but of course in financial questions his responsibility is not exclusive; his superiors have the ruling voice, and often an overruling voice. Railway signal practice on the great majority of roads can be commended as being characterized by a high degree of efficiency; but railway safety is such a vital matter that high efficiency is not satisfactory; there is still a serious problem in the quest for the highest possible. Perfection is the only true goal.

#### ADVANCING RATES IN GREAT BRITAIN AND THE UNITED STATES.

WHILE the eastern railways in the United States are seeking approval by the Interstate Commerce Commission of their petition to be allowed to make a horizontal 5 per cent. advance in freight rates, it is of interest to note that the English railways are in a somewhat similar position. A preliminary notice has just been issued on behalf of the railway companies of the United Kingdom to the effect that on and after July 1 their rates for merchandise traffic will, with certain exceptions, be increased by amounts which have been estimated to average 4 per cent. The proposed increases will be passed upon by the Railway and Canal Commission.

There is, however, one important difference between the situation in Great Britain and the United States. It is a practical certainty that the rates of the British railways will be advanced, while there is no such certainty about the outcome in this country. In other respects the conditions in which the English and American roads find themselves are strikingly analogous.

A general railway strike in the United Kingdom in August, 1911, was settled by an arbitration agreement after the intervention of the government for the purpose of putting an end to an industrial dispute which threatened the best interests of the country. The railways agreed to the arbitration program only upon the explicit stipulation that the ministry would recommend to Parliament the passage of a bill giving the railways the right to plead increased labor cost as a valid justification for a reasonable general increase in rates to offset such increases of pay as might have to be granted. The Royal Commission which arbitrated the wage question allowed many increases in wages and improvements in working conditions. The British traders and some representatives of the labor and socialist element put difficulties in the way of the Bill in its passage through Parliament, but it was enacted.

The significance of the promise of the government lies in the fact that by an act of 1894 the railways cannot advance rates above the level of 1892, even up to the legal maxima previously fixed by Parliament, without justifying their action before the Railway and Canal Commission on the ground of an increase in the cost of rendering the particular service involved. Under the legislation recommended by the ministry and recently passed by Parliament the companies will be relieved of the difficult task of distinguishing before the Commission the specific increases in the costs of carrying the various articles, being merely required to show that the cost of handling the entire traffic has been

increased to the extent of the wage advance. This, of course, can be easily done.

The action of the British ministry in the crisis that confronted it is a striking example of political opportunism. To keep itself in power it needed labor votes, and it gave the working men an advance in wages. It also promised capital an advance in railway rates, and it acted for the good of the public generally by ending a disastrous strike.

In this country, in addition to various other increases in the cost of operation, such as taxes, advances in the cost of materials, and the additional expenses imposed by legislation, the railways have also been obliged to pay substantial and repeated advances in wages after arbitration practically forced by the government under conditions similar to those which prevailed in England. The Erdman arbitration law, which was passed at the instance of the labor brotherhoods, in no way detracts from their privilege of striking, while it practically forces the railways to submit all demands for increased wages to arbitration by placing them in an untenable position before the public if they refuse. Arbitration proceedings under this act have always resulted in compromise advances in wages which in the past two or three years have added many millions to operating costs. That the railways have been able to stand such increases in expenses for so long has, of course, been due to the general increase in the volume of traffic. The increase in gross earnings is no longer sufficient to offset the increase in expenses, and the railways therefore find themselves in the same position as the British roads.

The outcome in England seems to be a foregone conclusion because the railways are only required to justify increases in rates by increased expenses. In this country advanced rates are required to be reasonable, and the determination of what is reasonable is in the hands of the seven Interstate Commerce Commissioners.

#### NEW BOOKS.

*Proceedings of the Fourteenth Annual Convention of the American Railway Engineering Association.* Size 6 in. x 9 in.; 1,491 pages; bound in paper, cloth and half morocco. Published by the American Railway Engineering Association, Chicago. Price: paper, \$6; cloth, \$6.50, and half morocco, \$7.

Although appearing somewhat later than last year, these proceedings are brought out within two and one-half months of the convention, this association being conspicuous for the promptness with which its proceedings appear. The volume this year contains about 250 more pages than that of the preceding year. In addition to the constitution and minutes of the business session, the reports of 21 committees are published. As in past years, most space is devoted to the report on rail, this requiring 410 pages this year and including the revised specifications for steel rails, the annual rail failure statistics and the results of several detailed studies. As in last year's proceedings, the discussions upon these reports are grouped together after the last report to simplify the work of publication. Following these discussions there appear seven monographs covering 304 pages, including "Locomotive Fuel Consumption and the Speed Diagram," by A. K. Shurtleff; "General Specifications for 150-ton, 45-ft. and 60-ft. Track Scales," by H. T. Porter; "Tests of Longleaf Pine Bridge Timbers," by H. B. MacFarland; "Bridges Over Navigable Rivers," by C. E. Smith, and "English Track on the Pennsylvania Railroad," by Jos. T. Richards. The reports included in this volume and the discussions upon them are among the best which have been presented in the history of the association and they will doubtless find a wide demand among others than members. The increasing size of the proceedings from year to year reflects the continually broadening scope of its activities. The innovation first introduced last year of printing the proceedings upon thin paper has been followed again this year. The proceedings are well printed and should make a favorable impression.



## Letters to the Editor.

### THE WORKING OF THE HINE UNIT SYSTEM.

CHICAGO, Ill., June 6, 1913.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

As a matter of justice to the author of the unit system of organization, and to prevent an erroneous understanding in the minds of the multitude of railway officials who are looking for betterments in their organization, it appears a duty to make reply to the article appearing in the *Railway Age Gazette* of May 9, under the caption "A Reverie on the Unit System," by "Observation," and I therefore comment on it seriatim.

It is certainly no reflection on transportation employees to state that there are a great many of them who are derelict in their duty, as it is a well established fact that man in general is as lazy as he dare be, and one of the strong points in favor of the unit system is that it provides ample supervision so that it will not be necessary for one employee to criticize another, or hesitate to point out a duty for fear of retaliation, as scarcely a day passes without some one of the members of the official staff passing over the entire division, and their expanded authority and interest in the division as a whole rather than in their particular department so improves the situation that a better feeling is almost immediately engendered between the various employees.

The unit system is open not only to mechanical men, but to those of other departments, and becomes a part of the process of evolution by placing men gradually in advance positions with added responsibility in order to determine their ability to maintain their equilibrium under greater pressure.

As "Observation" has selected the position of master mechanic from which to draw his conclusions, we will continue to use the master mechanic for illustrative purposes in this article.

The master mechanic is responsible for proper and economical maintenance of the mechanical department, but he is not instructed by the superintendent of motive power (assistant general manager) in any matters, but gets his instructions through the division superintendent to whom he is directly subordinate, and the instructions from the superintendent need no accompanying letter from the president or general manager to strengthen them, as the superintendent and not the assistant reports direct to the superintendent of motive power (assistant general manager), and any difference of opinion is settled between these officers, doing away entirely with the disorganizing feature which formerly existed of passing the word around generally that the master mechanic was in a row with the superintendent and was going to take the matter up with the superintendent of motive power in order to have the division superintendent shown where to "head in." In order to demonstrate the lack of necessity of any subordinate division official communicating with a general officer, the originator of the unit system has omitted the name of general officers from the time card, on the assumption that it is a working time card only, used for the guidance of division employees and that it is not necessary for any division employee to know that a man of higher authority than the superintendent exists.

Under the unit organization, the master mechanic (assistant superintendent) is expected to visit outlying roundhouses as frequently as in his judgment is necessary to regulate mechanical matters, and he is permitted to do this by having a competent man, possibly a mechanical expert, having charge of the superintendent's office, of which he also has become a part, rather than leaving matters in the hands of a chief clerk with no mechanical training. The latter arrangement makes his uppermost thought during his absence from the office the necessity of returning quickly in order that his interests may be taken care of. He is not called to headquarters frequently for conferences, as the superintendent of motive power, having become an assistant general manager, is working under the same system

of organization and is passing over the line frequently, discussing these matters on the ground, and with much better results than are possible at headquarters.

By having his office in the building with the superintendent, the master mechanic comes into closer touch with the entire situation, which is materially beneficial to both the company and himself, but there is nothing that demands his visiting the office once each day to handle correspondence, as experience has proven that a great deal of the correspondence formerly needing "personal attention" can, in most cases, be handled equally as well by the man on the "lid," and that a large percentage can just as well be filed (which the chief clerk has no authority to do), as to prolong it indefinitely, with very little to be accomplished except to have the last word, as the organization has now become divisional instead of departmental.

It is a foregone conclusion that the man is qualified to fill the position he is holding, otherwise the appointment would not have been his. The changing of title or issuing of circulars enlarging the scope does not add either knowledge or experience, but it does impress upon those interested the necessity of broadening out, becoming assistant superintendents in the full sense of the word, and this is just what experience has proven.

Under the departmental organization, the master mechanic would, in most cases, be indignant and consider it an encroachment upon his territory and departmental rights to feel that the division engineer, who is, in the majority of cases, an educated, college-bred man, had presumed to incorporate in his vocabulary the term "superheat," and the engineer would be equally as indignant to hear the master mechanic making mention of "super-elevation," yet a complete understanding of either subject is easily within reach of the ordinary layman, and it will not be long after the introduction of the unit system until these men will be discussing these subjects and soliciting opinions each from the other on them.

One of the wisest provisions of the unit system is the prohibiting of correspondence between subordinate division officials and the general officers, as no man can well superintend a property when a large portion of his time is taken up trying to keep in touch with what arrangements have been made by his subordinate officers, "shoo-flying" his position and dealing direct, especially when the explanation of the cost of operation is one that he alone is called upon to make.

No conflict of orders or understanding should arise on account of verbal conversation between the master mechanic and the superintendent, for the superintendent is deeply interested in keeping the senior assistant posted on all points, and if these conferences take place at division headquarters, the senior assistant will no doubt be present.

It is presupposed that the organization consists of men who, if called to headquarters to confer on mechanical matters, will understand that it is not "presumably" on mechanical matters, and will not try to use this occasion to get out of their systems the bile that has accumulated on account of the division being run by the superintendent and not by some particular department head.

The above is the unit system as worked out by the originator thereof, and to follow it will increase the efficiency of superintendence at least 30 per cent., and no better proof of this assertion is required than an examination of the operating ratios of the lines now under his charge which will show from 10 per cent. to 20 per cent. less than that of the railroads in general throughout the country.

In presenting his plan, Major Hine, with his usual broad and liberal policy, gave it to the public free of cost, presenting it as a step in the right direction, requesting everyone to study it carefully, note results and improve upon it where possible. This, however, was done only in a very few cases. In some cases a chief clerk was so thoroughly entrenched that it was not deemed wise to displace him, while at the same time it was admitted that he had no qualifications that would permit of his advancement. In others, some of the department heads offered as an

excuse for opposing the organization that their case was so different from all others, and that they would lose their identification by this change in title, yet I believe that it will be conceded that a man who has specialized in any line only to the point where his identity will be lost should his tag of identification in the way of a title be taken away from him, has not advanced sufficiently far to entitle him to much consideration, and the catering to this feeling has brought about a condition on some divisions that would justify the originator in taking determined action to dissociate his name from some abortions which are attributed to his creation.

General officers have in some cases also disliked very much to lose control of their trusted division employees, who had been their watch dogs and in most cases the chief disturbers on the division on which they operated.

The Standard Code is a success, because of its being adopted by nearly all roads; the Interstate Commerce Commission's system of accounting is a success because of the penalty for its violation; the Hine system will be equally as successful when men realize that the railway organization as a whole is of greater moment than their departments, a thing which most men cannot, or will not, see.

EXPERIENCE.

#### CAR UNDERFRAME DESIGN.

SCRANTON, Pa., May 19, 1913.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In your issue of May 16 you published an article regarding the design of steel underframes for cars by F. F. Gaines, superintendent of motive power of the Central of Georgia. I agree with Mr. Gaines that the best designs have been produced by a process of elimination and substitution, based upon repair track records as well as observation. A great deal of the trouble experienced today is the result of steel underframes built from an engineering or mathematical standpoint. The theory of tying the center sill or member in proportion to the width of its flange may be mathematically correct, but does not prove out in service. It is a common occurrence to find them buckled within 12 in. back of the body bolster. Cover plates unquestionably should be extended through the body bolsters, both top and bottom, as far as the draft rigging will permit, in connection with a wide top bolster plate which will act as a gusset plate as well as assist in carrying the vertical load, thereby protecting the car against lateral stresses and a tendency to break down the center sills at the bolsters. Mr. Gaines' views appear to me to be very sound and worthy of serious consideration in designing steel underframes for freight car equipment.

J. C. FRITTS,

Master Car Builder, the Delaware, Lackawanna & Western Railroad Co.

#### ENGINEER, ENGINEMAN OR ENGINE DRIVER?

NEW YORK, May 26, 1913.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In the issue of the 19th inst., of a New York journal, which, by reason of its deliberate and persistent practice in the matter to which I refer, will be recognized without being named, I find a news item, which I abridge as follows:

*Prominent Engine Driver is Killed in a Wreck.*

Decatur, Ind., Monday.—J. Ray Dickinson, engine driver, and Emery Hosler, fireman, both of Huntingdon, Ind., were killed five miles east of here when an Erie passenger train running on a temporary track ran off the rails. No passengers were killed or injured.

"Dickinson, engine driver, was a member of the last Indiana Legislature," etc.

As you are well aware, the Erie does not have any employee known as an "engine driver" in its service, and it is probable that the management of the journal referred to is equally aware of that fact, it having been respectfully informed that no railroad in the United States carries an employee so designated on its pay rolls. It, however, not only continues to invariably use this

incorrect and unwarranted designation, but also, from time to time, makes a deliberate falsification of facts, by printing interviews with railroad officials, as to accidents, in which, *between quotation marks*, the official is reported as stating that the "engine driver" did thus and so, when, as a matter of fact, he spoke *correctly*, and said either "engineer" or "engineman."

I have no desire to discuss the propriety of terming the runner of a locomotive in the United States, an "engineer," and do not doubt that the term "engineman," which is in general use, is a properly descriptive one. There is, however, no warrant or excuse whatever for the misnomer, "engine driver," and it is moreover, offensive and derogatory, in view of its frequent, and in the case of the journal referred to, apparently *intended* application (like that of the word "greaser" to the former engineer officers of the United States Navy), as a term of contempt. The practice appears to me to be a piece of cheap and sloppy snobbery, and the public should recognize it as such.

J. SNOWDEN BELL.

#### THE IMPORTANCE OF THE STATION AGENT.

SALT LAKE, Utah, April 25, 1913.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The salary of a station agent, a subject treated in your issue of March 28, has seldom received the careful consideration which it demands as a feature of an important branch of the service. Who but the station agent is the direct representative of the company in its dealing with the public, and who has greater power to promote the interests of his company, secure business, and hold it, especially in competitive territory? The rates of pay, except at terminals and cities, have to a large extent been fixed on the basis of labor union demands, with perhaps a compromise, and the result is a schedule that is seldom entirely satisfactory to the men themselves, much less to the company which does not get the benefit which the increased salaries should bring, for the reason that to a great extent "seniority" is of no value as a standard by which to judge of the qualifications or fitness of an agent. This knowledge is only gained by personal contact with the man, observing his dealings with the public, his promptness in answering correspondence, attention to matters involving loss or damage to freight and the general appearance of his office. Superintendents seldom get well enough acquainted with their agents to learn these things. Salaries cannot be equitably based on the amount of a station's earnings, or the percentage of expense necessary to run it, for the reason that one station may handle largely carload lots, while another may handle L. C. L. and transfer; with a much lower revenue, but a greater amount of work. In many cases agents are allowed no latitude in increasing their clerical force when that is necessary to care for increased business. Sometimes after a long and tedious correspondence, during which time the office has become "snowed under," and the force demoralized; and the agent has had to devote his time to detail clerical work, when his services are needed elsewhere, he is grudgingly allowed an extra man.

Pay the agent what he is worth, as measured after acquiring a personal knowledge of the requirements of his station. Get acquainted with him, show him you have a personal interest in him, and make an occasional inspection of his premises. If he is filling the bill he will appreciate the superintendent's visit and be stimulated by it. On the other hand, if an agent is negligent or lacking in energy it is the superintendent's duty to make the visits so as to know the situation at first hand.

F. F. B.

ICHANG RAILWAY, CHINA.—Work on the Ichang railway has never been resumed since October, 1911, when it was stopped on account of the revolution. The completed work on the right of way is now in a deplorable state of disrepair and will have to be entirely renovated when work is once more resumed. The buildings are in fair condition, having been used as barracks.



# MECHANICAL STOKERS FROM OPERATING STANDPOINT.

Heavy Trains Are Being Successfully Operated on Four Large Roads by Locomotives Equipped with These Machines.

The mechanical stoker for locomotives has always been considered of more interest to the mechanical than to the operating department, probably because it is purely a mechanical device. Where used it has, however, a very important bearing on operating results. There is no doubt that it has passed the experimental stage and is now on a commercial footing, and that its use will extend rapidly wherever heavy traffic has to be moved. Up to a little over a year ago stokers had been applied experimentally to a few locomotives only; there are now in regular service 342 locomotives equipped with stokers and 313 to be so equipped are on order.

It is not the intention to deal here with mechanical details. It has been through the co-operation of such roads as the Norfolk & Western, Chesapeake & Ohio, Baltimore & Ohio and the Pennsylvania with the stoker manufacturers that the mechanical difficulties have been overcome to a sufficient degree to bring the stoker to its present status, and with a continuance of this co-operation the failures due to mechanical imperfections should be reduced to a minimum in a comparatively short time. Changes in details are being made wherever experience and service indicate that they should be made, but it is unreasonable to expect that mechanical failures will ever be entirely eliminated any more than they are from the locomotive.

There seems to be a difference of opinion regarding the ability of stoker-fired locomotives to haul more tonnage than hand-fired. On the Pennsylvania Lines west of Pittsburgh the tonnage of stoker-fired locomotives on slow freight is increased 15 per cent. over that of the hand-fired locomotives, and the Baltimore & Ohio also states that it is possible to haul more tonnage with the stoker-fired locomotives. Whatever increase in hauling capacity there may be is evidently due to the more uniform steam pressure obtainable where the stoker is used and the ability of the machine to fire in an efficient manner, enough coal to maintain the working pressure under conditions which the average fireman might not meet; for the same reason a better average speed is possible. It is generally conceded that a locomotive can be worked much harder when stoker fired than when fired by hand, as there is no question of the machine being able to supply any quantity of coal that the firebox will burn; the stoker will not, of course, increase the maximum or starting tractive effort.

No definite data is yet available as to any saving in fuel, but it is probable that a saving can be shown, owing to the more satisfactory conditions, such as a lighter fire and the keeping closed of the firebox door; the maintaining of a lighter fire also permits steam to be raised to the working pressure more rapidly than with the deep beds of coal commonly used in hand firing. Moreover the thinner fire saves approximately half the time usually occupied in cleaning and dumping the fires of hand-fired locomotives at terminals or on the road.

On the Pennsylvania system there are 155 stokers of the Crawford underfeed type in use, 153 of these being on the lines west of Pittsburgh. The accompanying table gives a performance record of the latter.

This shows that up to February 28, 1913, the stoker-fired locomotives had made 31,910 trips, of which 19,475, or 61 per cent., were trips on which the stoker fired 100 per cent. of the coal burned; and only 16.3 per cent. of the trips were below 70 per cent. stoker-fired.

The locomotives now equipped with stokers on the Pennsylvania lines west of Pittsburgh consist of 116 consolidation (2-8-0) type, 35 Pacific (4-6-2) type passenger and two six-wheel (0-6-0) switchers. It is probable that all heavy power built for this road in the future will be so equipped, and 140 locomotives are now on order which are to be stoker-fired.

PERFORMANCE OF THE CRAWFORD DOUBLE UNDERFEED STOKER ON THE PENNSYLVANIA LINES WEST OF PITTSBURGH, INCLUDING ALL TRIPS OF ALL STOKERS FROM THE EXPERIMENTAL INSTALLATION TO FEBRUARY 28, 1913.

Coal fired by stoker in per cent. of total coal fired.	Number of trips.	Per cent. trips of total number of trips.
100 .....	19,475 .....	61.0
99 .....	280 .....	0.9
98 .....	416 .....	1.3
95-98 .....	1,530 .....	4.8
90-95 .....	1,847 .....	5.8
85-90 .....	680 .....	2.1
80-85 .....	903 .....	2.8
75-80 .....	1,209 .....	3.8
70-75 .....	379 .....	1.2
Below 70 .....	5,191 .....	16.3
Total .....	31,910 .....	100.0

On the Norfolk and Western there are in service 40 Mallet (2-6-6-2) type locomotives fitted with the Street stoker. These locomotives have cylinders 22 in. and 35 in. x 32 in., 56 in. diameter drivers, 5,006 sq. ft. of heating surface, 72.2 sq. ft. of grate area and a tractive effort of 73,000 lbs. The weight in working order is 405,000 lbs., of which 337,300 lbs. is on the drivers. Twenty of these locomotives are working on the west end of the Norfolk division between Roanoke, Va., and Crewe, 130 miles; a profile of this section of the road is shown. Freight trains use the belt line around Lynchburg in order to avoid the dip caused by the valley of the James river. There are used at different points between Roanoke and Crewe, 4-8-0 type locomotives as helpers, the class M having a tractive effort of 40,100 lbs., and the class M-2 and M-2-c having a tractive effort of 52,400 lbs. The Mallet locomotives are known as class Z and the tonnage rating for this portion of the road is given in one of the tables.

ESTIMATED TONNAGE RATING, CLASS M, M2, M2c AND Z LOCOMOTIVES, NORFOLK & WESTERN (NORFOLK DIVISION), BETWEEN ROANOKE AND CREWE.

M .....	Roanoke to Bonsack.....	1,600 tons
M2 .....	Roanoke to Bonsack.....	2,000 tons
M2c .....	Roanoke to Bonsack.....	2,200 tons
Z .....	Roanoke to Bonsack.....	3,000 tons
M .....	Bonsack to Blue Ridge.....	1,000 tons
M2 .....	Bonsack to Blue Ridge.....	1,250 tons
M2c .....	Bonsack to Blue Ridge.....	1,440 tons
Z .....	Bonsack to Blue Ridge.....	1,850 tons
Z + M2 .....	Bonsack to Blue Ridge.....	3,100 tons
Z + M2c .....	Bonsack to Blue Ridge.....	3,250 tons
Z + Z .....	Bonsack to Blue Ridge.....	3,700 tons
M2 .....	Blue Ridge to Phoebe.....	1,900 tons
M .....	Blue Ridge to Phoebe.....	1,600 tons
M2c .....	Blue Ridge to Phoebe.....	2,200 tons
Z .....	Blue Ridge to Phoebe.....	3,100 tons
M2 .....	Phoebe to Farmville.....	3,500 tons
M2c .....	Phoebe to Farmville.....	4,025 tons
Z .....	Phoebe to Farmville.....	5,100 tons
M .....	Farmville to Burkeville.....	2,100 tons
M2 .....	Farmville to Burkeville.....	2,500 tons
M2c .....	Farmville to Burkeville.....	2,800 tons
Z .....	Farmville to Burkeville.....	3,700 tons
M2 .....	Burkeville to Crewe.....	No limit
M2c .....	Burkeville to Crewe.....	No limit
Z .....	Burkeville to Crewe.....	No limit

The movement of loads in slow freight is east, the traffic being largely coal. The practice followed is to start a Mallet locomotive double headed with a class M-2 from Roanoke yard with a train of 5,000 tons, but when the Mallets are ready and there does not happen to be a full train in the yard they are started with whatever tonnage there is, with or without a helper according to the rating. With 5,000 tons the Mallet and the M-2 locomotives haul the train to Bonsack. From Bonsack to Blue Ridge a Mallet pusher is added to the train and from Blue Ridge to Phoebe the train is hauled by the two original locomotives, the M-2 class being needed for the grade from Posm to Phoebe, where it is cut off and the train proceeds to Crewe with the Mallet locomotive alone with the exception of 16 miles between Farmville and Burkeville, where a class M-2 pusher is used. One of the diagrams shows the record for part of April, 1913, of eastbound trains hauled by Mallet locomotives. This record

covers about two-thirds of the month and is representative of the whole month.

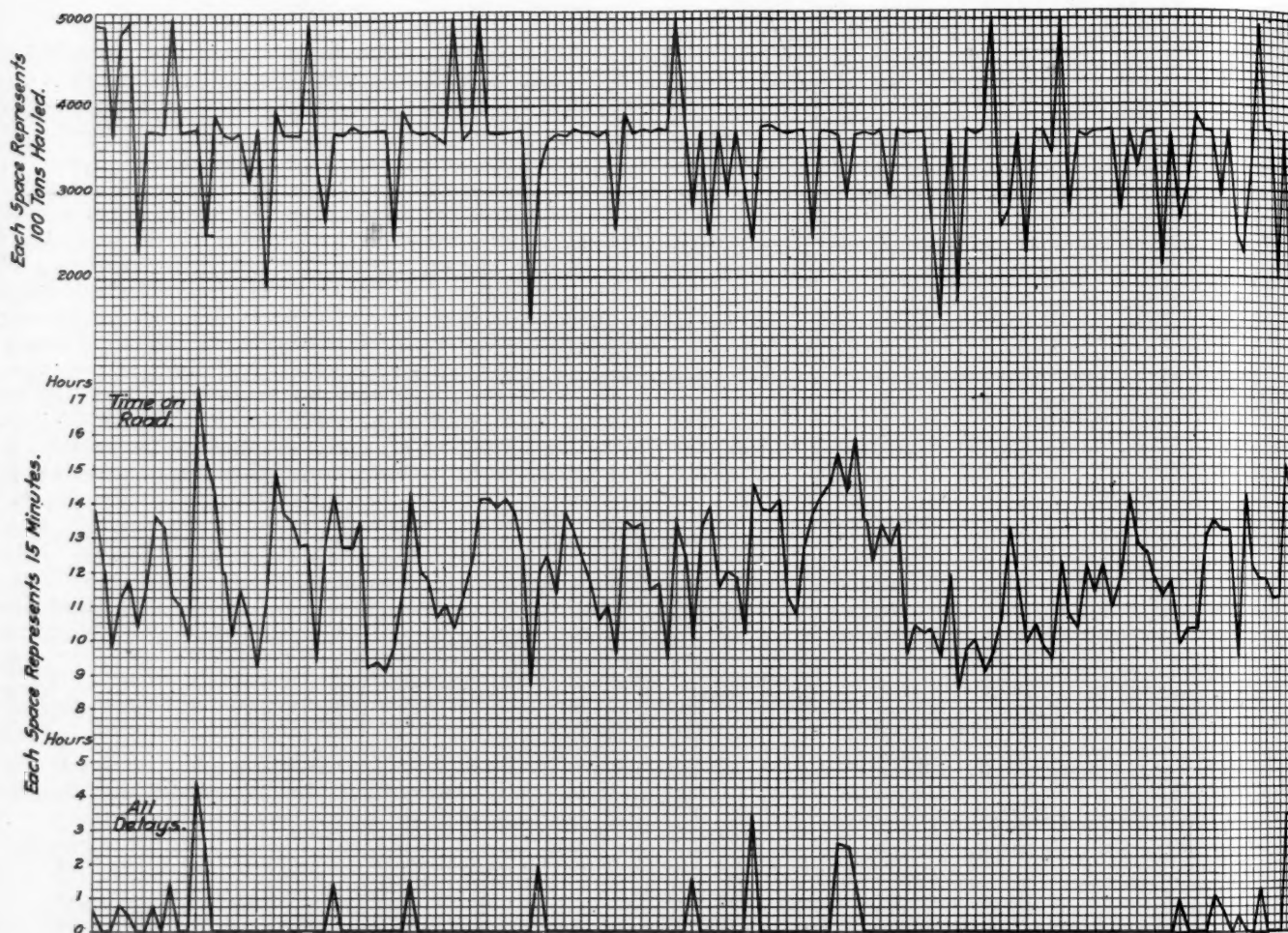
The upper part of this diagram gives the tons in each train and by referring to the two lower parts the total time on the road and the total delay for the same train are obtained. This diagram is compiled from the superintendent's daily reports from which the following extracts are taken as examples:

"Mallet locomotive 1316, 53 loads, 3,708 tons (slow freight) left Roanoke 3:10 a. m., arrived Crewe 4:45 p. m. April 2. Did not have double header from Roanoke to Phoebe, but had pusher from Bonsack to Blue Ridge. Delayed 45 min. at Irving on account engine failing, water valve blowing off. Total time, 13 hr. 35 min."

"Mallet locomotive 1321, 70 loads, 5,017 tons (slow freight)

the machinery, 5 to shop failures and 9 to the stoker becoming blocked up with wood, etc. In this connection it should be remembered that a failure of the stoker is not necessarily an engine failure, as the fireman may be able to fire by hand. The mileage of the 40 Mallets from April, 1912, to January, 1913, was 525,563, the mileage per stoker failure being 11,679, and per failure other than stoker 3,526. The percentage of the total failures due to the stokers was 23.2.

The Norfolk & Western, in order to obtain small sized coal for the stoker locomotives passes run-of-mine coal over a 2½ in. mesh screen, this being the size of the screen on the stoker feed. The slack and small lumps are then available for stoker use and the larger lumps pass on to another part of the coal chute and are used for hand fired locomotives. This practice provides the



Record for Part of April, 1913, of Eastbound Trains Hauled by Mallet Locomotives on N. & W. Between Roanoke and Crewe.

left Roanoke 11:10 a. m., arrived Crewe 10:25 p. m. April 2, M-2 locomotive 1122 double heading Roanoke to Phoebe. Delayed 1 hr. 20 min. at Lowry account broken drawheads and setting off cars. Total time, 11 hr. 15 min."

"Mallet locomotive 1320, 52 loads, 3,656 tons (slow freight) left Roanoke 11:15 p. m. April 7, arrived Crewe 1:00 p. m. April 8. Did not have double header, but had pusher Bonsack to Blue Ridge. Total time, 13 hr. 45 min."

The total mileage of the 40 Mallet locomotives during March, 1913, was 105,501, and the total stoker failures was 13, the mileage per stoker failure being 8,115. The total engine failures attributed to the stokers from April, 1912, to January, 1913, both months inclusive, was 45, an average of 4.5 per month, the greatest number for any month being 12 during January, 1913. Of the 45 failures, 14 were due to improper handling, 7 to lack of lubrication, 1 to a hidden defect, 9 to fresh breaks or trouble with

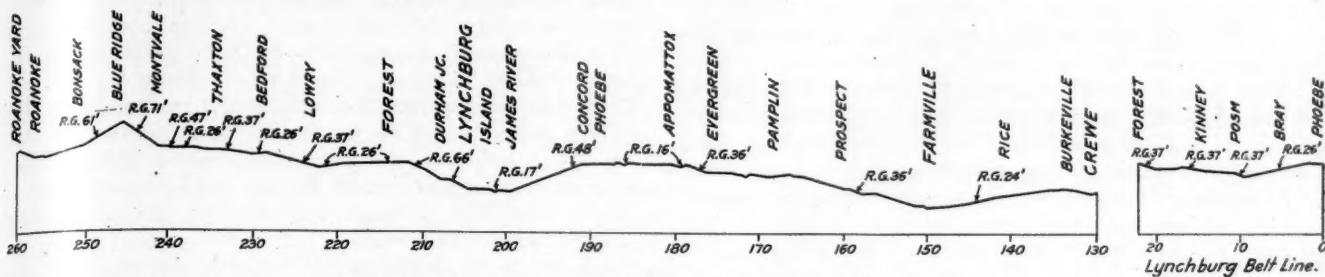
latter with a better quality of fuel than they would otherwise obtain.

On the Chesapeake & Ohio there are in operation 54 locomotives equipped with Street stokers. Of these the greater number are of the Mikado (2-8-2) type, having a total weight of 315,000 lbs., weight on drivers of 243,000 lbs., 29 in. x 28 in. cylinders, 56 in. drivers, 4,052 sq. ft. of heating surface and 667 sq. ft. of grate area; their tractive effort is 60,800 lbs. On the Huntington division five of these locomotives are assigned to manifest trains between Russell, Ky., and Hinton, Va., 167 miles, and four are assigned to the same service on the Hinton division between Hinton and Clifton Forge, Va., 180 miles. The rating for manifest trains, eastbound, is 2,500 tons adjusted for a speed of 20 miles per hour, while westbound the lading is of such a character that a tonnage rating is not feasible and a limit of 65 cars is placed on the trains. On the Huntington division



the schedule for manifest trains, eastbound, is 11 hours, and westbound 11 hours, 20 min. The ruling grade in both directions is 0.3 per cent. On slow freight the locomotives operate between Russell and Handley, 94 miles, and between Handley and Hinton, 73 miles, the rating being 6,000 tons. The slow

months are not representative. The table below gives the performance of Mikado locomotives on the Huntington and Hinton divisions during part of March, 1913. The entire train record for the month is not included, but several days were taken at random.



Profile of the N. & W. Between Roanoke and Crewe, Va.

freight traffic is almost entirely coal, the loaded movement being westbound. Some difficulty has been experienced owing to the Street stoker requiring coal which will pass through the 2½ in. screen of the conveyor, and in the accompanying tables the percentage of failures due to this cause is shown. This trouble can be avoided by supplying either slack or lump coal of the right size. The tables are taken at random.

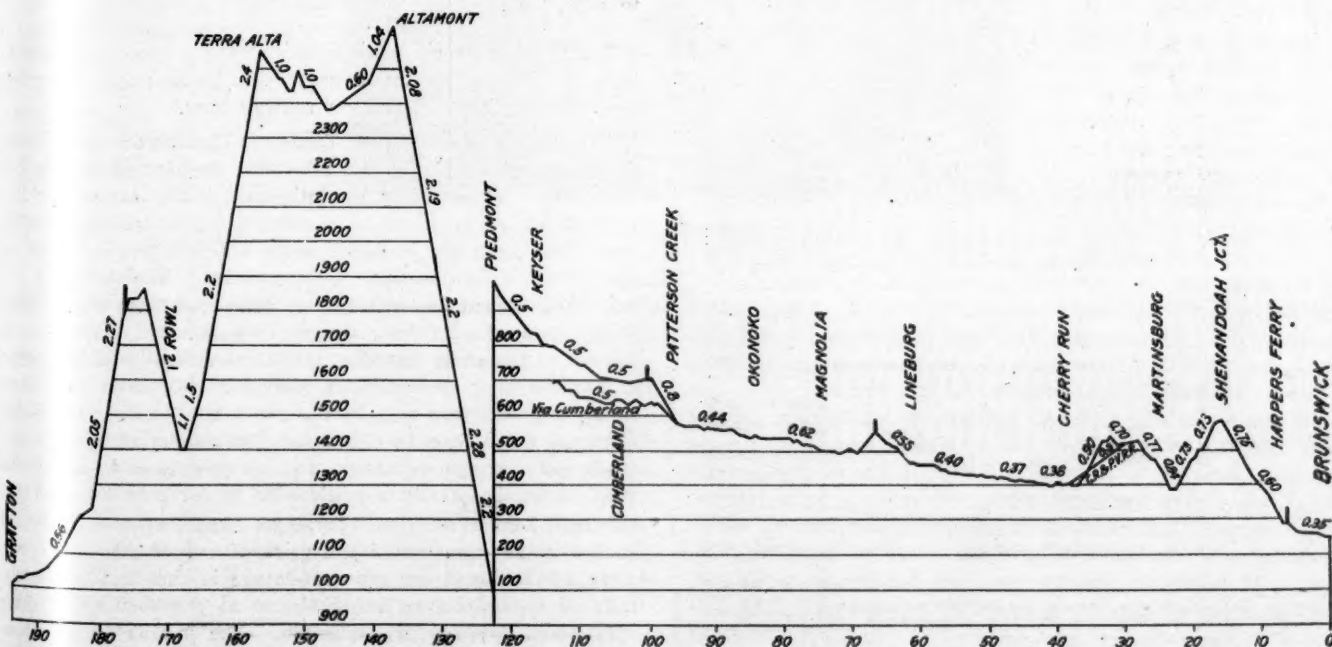
Engine No.	Trip made From To	Per cent. of coal stoker fired.	Tonnage.
844	Handley.....Russell	100	2,800
818	Handley.....Russell	100	3,000
817	Cane Fork.....Russell	100	6,000
816	Handley.....Russell	100	2,500
813	Handley.....Russell	100	4,000
842	Handley.....Russell	100	2,500
815	Cane Fork.....Russell	100	6,000
824	Handley.....Russell	100	6,000
845	Handley.....Russell	100	2,500
841	Handley.....Russell	100	3,000
843	Cane Fork.....Russell	100	6,000
815	Cane Fork.....Russell	100	6,000
818	Handley.....Russell	100	6,000

The locomotive miles per stoker failure on the Huntington division for March, 1913, were 9,167, and on the Hinton division during the same month there were no failures. For November and December, 1912, and January, 1913, the performance of the entire 54 locomotives was 4,474 miles per stoker failure.

Apart from relieving the fireman from physical exertion, a point upon which the operating officers of the Chesapeake & Ohio lay particular stress is that he is made available as one of the train crew to watch for signals and otherwise assist the engineman. J. R. Cary, general superintendent of the West Virginia general division, which includes the Huntington and Hinton divisions, also emphasizes the fact that the firemen and enginemen have worked heartily with the officers to make the stokers a success. When the stoker-fired locomotives were first placed in service special coal was provided and the road foremen and a few chosen firemen were instructed by experts until familiar with the machines; these men were then available as in-

	Per cent. of coal fired by stoker.	Number of trips.	Per cent. failures from mechanical defects.	Per cent. failures due to coal and screen.
Huntington Division, August, 1912 .....	100	168	25	75
	75-99	24	33.3	66.6
	1-74	12	50	50
	By hand	4		
Hinton Division, August, 1912 .....	100	137	0	100
	75-99	1	33.3	66.6
	1-74	3	20	80
	By hand	26		
Huntington Division, September, 1912 .....	100	142	50	50
	75-99	6	33.3	66.6
	1-74	6		100
	By hand	1		
Hinton Division, September, 1912 .....	100	177	(No trips below 100%)	
Hinton Division, February, 1913 .....	100	262	(No trips below 100%)	
Huntington Division, March, 1913 .....	100	329	20	50
	75-99	2	66½	100
	1-74	7		33½
	By hand	3		

Owing to the washout of the Guyandot river bridge, the Chesapeake & Ohio was operated far below normal during the months of January and February, 1913, and figures for those



Profile of the Cumberland Division of the Baltimore & Ohio.

RECORD OF INDIVIDUAL TRIPS OF STOKER-FIRED LOCOMOTIVES IN FREIGHT SERVICE, FROM OBSERVATIONS MADE IN FEBRUARY AND MARCH, 1913, ON THE BALTIMORE & OHIO.

Loco- motive No.	Class of loco- motive.	Date.	From—	To—	Miles.	Class of train.	Tons in train.	Total time on duty. H.M.S.O.	Total actual manual labor.		Supplying coal to firebox with scoop. (14)		Hoisting and scrapping. (15)		Shaking grate. (16)		Breaking coal and stoker. (17)		Shovel- ing coal ahead and pan. (18)		Cleaning fire and pan. (19)		Total of columns 14-19. Time.		All other manual labor.	Total pounds coal burned.
									Time.	%	Time.	%	Time.	%	Time.	%	Time.	%	Time.	%	Time.	%	Time.	%		
4187	2-8-2	2-20-13	Brunswick	Cumberland	104	Fast Frt.	1,204	5-50.0	3-36.45	61.9	15-07	4.3	11-08	6.0	2-59.30	60.3	3-31.45	60.3	5-0	20,384	5-0	20,384	5-0	20,384	5-0	20,384
4214	2-8-2	2-22-13	Brunswick	Cumberland	104	Slow Frt.	1,442	11-50.0	4-36.36	38.9	12-15	1.7	11-21	2-0	3-53.0	35.8	4-23.36	35.8	5-0	26,940	13-0	26,940	13-0	26,940	13-0	26,940
4184	2-8-2	2-22-13	Brunswick	Cumberland	104	Fast Frt.	2,884	10-47.0	3-46.23	35.0	35-42	5.6	4-53	1-18	2-0	2-0	2-44.53	25.5	3-0	28,000	3-0	28,000	3-0	28,000	3-0	28,000
4211	2-8-2	2-22-13	Brunswick	Cumberland	104	Slow Frt.	2,258	15-00.0	7-27.33	49.7	48-36	5.5	21-50	5-20	5-15.0	44.5	6-39.46	44.5	9-0	42,419	9-0	42,419	9-0	42,419	9-0	42,419
4194	2-8-2	2-14-13	Brunswick	Cumberland	104	Slow Frt.	2,247	13-00.0	1-0.10	6.9	27-44	3.2	14-43	5-15	5-15.0	5.5	47-42	5.5	6-33	32,520	6-33	32,520	6-33	32,520	6-33	32,520
4202	2-8-2	2-19-13	Cumberland	Brunswick	104	Slow Frt.	1,548	4-30.0	56.24	20.9	13-03	4.8	8-14	1-39	1-39.0	11.8	31-35	11.8	2-0	24,550	2-0	24,550	2-0	24,550	2-0	24,550
4198	2-8-2	2-21-13	Cumberland	Brunswick	104	Slow Frt.	5,030	12-40.0	4-49.52	38.1	28-06	3.7	32-49	23-47	2-45.10	32.9	4-10.2	32.9	2-0	37,250	2-0	37,250	2-0	37,250	2-0	37,250
4171	2-8-2	2-23-13	Cumberland	Brunswick	104	Fast Frt.	1,604	5-50.0	1-48.08	30.9	9-27	2.6	19-46	1-15	1-8.25	9.15	1-38.53	28.3	2-0	21,722	2-0	21,722	2-0	21,722	2-0	21,722
4182	2-8-2	2-23-13	Cumberland	Brunswick	104	Fast Frt.	1,348	10-15.0	2-12.42	21.6	24-32	4.1	2-40	4-28	1-0	4.20	1-38.53	28.3	2-0	27,628	2-0	27,628	2-0	27,628	2-0	27,628
4190	2-8-2	2-23-13	Cumberland	Brunswick	104	Fast Frt.	5,000	15-25.0	2-45.41	17.9	1-17.26	8.3	22-0	4-28	1-0	4.20	2-45.41	17.9	2-0	38,000	2-0	38,000	2-0	38,000	2-0	38,000
4205	2-8-2	2-21-13	Cumberland	Brunswick	104	Slow Frt.	5,014	14-05.0	6-18.59	44.9	23-34	2.8	36-51	8-13	4-15.0	41.0	5-47.09	41.0	6-40	24,074	6-40	24,074	6-40	24,074	6-40	24,074
4214	2-8-2	2-25-13	Cumberland	Brunswick	104	Fast Frt.	1,906	8-20.0	1-23.39	18.7	14-45	3.0	17-37	5-20	20-51	13.0	1-5-13	13.0	1-11-39	11.50	1-25	26,096	1-25	26,096	1-25	26,096
4188	2-8-2	2-26-13	Cumberland	Brunswick	104	Slow Frt.	5,011	12-05.0	2-33.19	21.2	17-20	2.3	12-22	4-43	51-36	13.4	1-38-01	13.4	1-38-01	38,638	1-38-01	38,638	1-38-01	38,638	1-38-01	38,638
4210	2-8-2	2-26-13	Cumberland	Brunswick	104	Slow Frt.	5,000	14-00.0	3-30.12	25.2	32-14	3.8	11-48	7-37	1-33.0	19.8	2-30	19.8	2-30	38,000	2-30	38,000	2-30	38,000	2-30	38,000
4179	2-8-2	2-26-13	Cumberland	Brunswick	104	Slow Frt.	5,003	11-35.0	4-23.41	38.0	17-28	2.4	53-0	3-54	1-58.12	28.2	3-15-40	28.2	3-6	30,383	3-6	30,383	3-6	30,383	3-6	30,383
4181	2-8-2	2-24-13	Cumberland	Brunswick	104	Fast Frt.	3,124	8-45.0	3-33.52	40.7	47-58	9.1	16-36	4-17	1-24.57	30.5	2-39-54	30.5	5-46	30,398	5-46	30,398	5-46	30,398	5-46	30,398
4204	2-8-2	2-21-13	Cumberland	Brunswick	104	Slow Frt.	1,990	5-28.0	1-18.32	23.9	14-38	4.6	3-59	1-40	25-0	15.2	49-32	15.2	4-15	27,818	4-15	27,818	4-15	27,818	4-15	27,818
4204	2-8-2	2-27-13	Cumberland	Brunswick	104	Slow Frt.	5,006	11-30.0	3-1.45	26.4	29-43	4.4	18-40	7-25	58-56	58.0	2-3-5	58.0	8-21	31,093	8-21	31,093	8-21	31,093	8-21	31,093
4204	2-8-2	2-28-13	Cumberland	Brunswick	104	Slow Frt.	5,000	13-50.0	2-17.55	17.0	29-40	3.7	10-27	8-13	38-15	11.7	1-34-35	11.7	3-0	43,400	3-0	43,400	3-0	43,400	3-0	43,400
4204	2-8-2	2-28-13	Cumberland	Brunswick	104	Slow Frt.	5,001	13-50.0	4-42.52	34.1	48-43	5.9	24-51	8-16	1-29.35	13.1	3-28-17	13.1	13-12	36,315	13-12	36,315	13-12	36,315	13-12	36,315
4211	2-8-2	3-1-13	Cumberland	Brunswick	104	Slow Frt.	5,035	19-30.0	1-26.32	11.3	1-8.22	5.8	27-12	4-35	1-29.35	9.7	1-53-09	9.7	13-0	44,720	13-0	44,720	13-0	44,720	13-0	44,720
2413	0-8-8-0	3-3-13	Rowlesburg	Terra Alta and return	24	Fast Frt.	1,700	3-20.0	1-26.32	43.5	18-53	5.8	2-1	3-55	31-16	31.6	3-16	31.6	3-16	4,754	3-16	4,754	3-16	4,754	3-16	4,754
2413	0-8-8-0	3-3-13	Rowlesburg	Terra Alta and return	24	Slow Frt.	1,650	4-20.0	1-26.32	37.0	18-53	5.8	2-1	3-55	31-16	31.6	3-16	31.6	3-16	6,091	3-16	6,091	3-16	6,091	3-16	6,091
2418	0-8-8-0	3-3-13	M. & K. Junction.	Terra Alta and return	22	Slow Frt.	1,790	4-20.0	1-26.32	37.0	18-53	5.8	2-1	3-55	31-16	31.6	3-16	31.6	3-16	8,271	3-16	8,271	3-16	8,271	3-16	8,271
2418	0-8-8-0	3-3-13	M. & K. Junction.	Terra Alta and return	22	Slow Frt.	1,790	4-20.0	1-26.32	37.0	18-53	5.8	2-1	3-55	31-16	31.6	3-16	31.6	3-16	8,271	3-16	8,271	3-16	8,271	3-16	8,271
2418	0-8-8-0	3-4-13	M. & K. Junction.	Terra Alta and return	22	Slow Frt.	1,790	4-20.0	1-26.32	37.0	18-53	5.8	2-1	3-55	31-16	31.6	3-16	31.6	3-16	8,271	3-16	8,271	3-16	8,271	3-16	8,271
2415	0-8-8-0	3-4-13	M. & K. Junction.	Terra Alta and return	22	Slow Frt.	1,558	2-40.0	1-71.10	44.6	14-46	10.0	9-18	7-15	14-44	14.4	14-44	14.4	14-44	7,444	14-44	7,444	14-44	7,444	14-44	7,444
2413	0-8-8-0	3-4-13	M. & K. Junction.	Terra Alta and return	22	Slow Frt.	1,153	3-25.0	1-22.15	51.2	14-49	9.4	4-1	7-28	43-05	38.8	1-1-55	38.8	1-1-55	8,487	1-1-55	8,487	1-1-55	8,487	1-1-55	8,487
2413	0-8-8-0	3-4-13	M. & K. Junction.	Terra Alta and return	22	Fast Frt.	1,153	3-25.0	1-29.6	43.5	30-29	14.6	7-28	4-1	16-39	26.8	54-36	26.8	45-27	34-30	45-27	34-30	45-27	34-30	45-27	34-30
Average								3-5.6	1-12.33	39.0	15.54	8.6	...	...	...	...	...	...	...	...	...	...	45-27	24.5	27-6	6,736

structors, and as the men became used to the stokers the special coal was gradually eliminated and a return made to the regular coal.

The Baltimore & Ohio has in service 64 locomotives equipped with the Street stoker, 50 of which are Mikados and are operating between Brunswick and Keyser on the Cumberland division, a profile of which is shown. The general dimensions of these locomotives are as follows: Total weight in working order, 282,200 lbs.; weight on drivers, 223,600 lbs.; cylinders 26 in. x 32 in.; diameter of drivers, 64 in.; heating surface, 3,968 sq. ft.; grate area, 70 sq. ft.; tractive effort, 54,500 lbs. There are also in service on the Cumberland division 13 Mallets (0-8-8-0) locomotives weighing 461,000 lbs. and having a tractive effort of 105,000 lbs. This road also intends to apply stokers to 126 additional locomotives.

Officers of the Baltimore & Ohio state that the stoker-fired locomotives are capable of hauling more tonnage and making better speed than those which are hand-fired; this is because of the stoker's ability to supply coal enough to the firebox to keep up the working steam pressure under conditions impossible for the average fireman to meet, as mentioned elsewhere in this article. The stokers are particularly valuable in the summer months, when the heat on these large locomotives becomes very trying to the fireman who has to fire by hand.

The accompanying table gives examples of trains operated on the Cumberland division, with data regarding time made and the labor performed by firemen on stoker-fired locomotives.

Considering the number of mechanical stokers now in use, the service which they are giving, and the number of locomotives which are being so equipped, there can be no doubt as to the future of the device. That it has advanced beyond the experimental stage is certain, and it is more than probable that, with the improvements being made from time to time, the failures will be rapidly reduced to a minimum. It seems to be generally agreed that the stoker will supply any amount of coal which a firebox will consume, and therefore that it will maintain a more uniform steam pressure than can be obtained by hand firing. The question of the larger types of locomotives being beyond the physical strength of a man to fire successfully can be readily settled by the adoption of the stoker, as there is no question as to its ability to do so. In considering the adoption of the stoker it would seem that each road will have to solve the problem largely from a close survey of its own conditions, but wherever heavy tonnage has to be moved over heavy grades by large locomotives there can be little doubt that the stoker can be used to advantage.

ELECTRIFICATION OF RUSSIAN RAILWAYS.—The Russian Minister of Finances has introduced to the Duma a bill concerning the electrification of suburban railway lines.

ARICA-LA PAZ RAILWAY TRAFFIC.—The traffic expected by the management of the Arica-La Paz line is not coming out as readily and as easily as anticipated. The reason for this is doubtless to be found in the rates, which are much higher than those upon the Mollendo route, which is the enterprise of the Peruvian Corporation's Southern line. The Arica-La Paz traffic department has received an intimation from the different mining companies, whose output it was hoped that it might handle, to the effect that the freight rates fixed will force them to continue their shipments via Mollendo. Moreover, the steamship companies have now fixed a much lower tariff rate for all Peruvian ports than for Chilean. The mining companies contend, and with good reason, that no profit can be earned by them under the present conditions on 15 per cent. ore, and that they will have to suspend operations altogether soon in regard to low-grade ores should the price of copper fall still lower. They allege that 8 per cent. grade ore is abundant in the district of Corocoro, and being almost at the surface, it entails very small expense in extraction. The mining of this low-grade ore will, however, depend entirely upon the transportation rates to the coast.



### W. J. JACKSON.

William J. Jackson, who has been vice-president and general manager of the Chicago & Eastern Illinois, at Chicago, for the past three years, and who was last week appointed one of the receivers of the road, was elected president at the annual meeting on June 5, to succeed B. L. Winchell, who was appointed one of the receivers of the St. Louis & San Francisco. Mr. Jackson has been in the service of the road continuously since 1891, when he became connected with it as assistant local freight agent at Chicago, and has risen by steady promotion to its operating head.

Aside from his work for his own company, in which he has won an enviable reputation for operating ability, Mr. Jackson is, perhaps, best known to the railway world through his work in the important position of chairman of the Special Committee on Relations of Railway Operation to Legislation, which he has held since the death of F. O. Melcher, in January of last year. He was also chairman of the General Managers' Association of Chicago, and of the Association of Western Railways in 1911, and is a member of the important Committee on Relations Between Railroads of the American Railway Association.

Mr. Jackson is a man who has obtained his present position by persistent hard work and faithfulness, and is another example of the many railway executives who have worked their way to the top only after learning the business from the ground up. He was born at Toronto, Ont., December 28, 1859, of Scotch-Irish parentage. His father was a hardware merchant. After obtaining his education in the grammar and normal schools of Toronto he entered railway service in 1877 as machinist's helper in the Grand Trunk shops at Toronto. After a few months he was transferred to the freight department. For three years he was a freight clerk at Toronto, and for approximately three years more was chief claim clerk of the Chicago &

Grand Trunk at Chicago. From August, 1885, to November, 1890, he was general freight foreman, and from November, 1890, to August, 1891, assistant agent of the same road at Chicago. He entered the service of the Chicago & Eastern Illinois as assistant local freight agent at Chicago in August, 1891. In January, 1893, he was made local agent, and from July 5, 1899, to February 1, 1903, he was assistant general superintendent. In 1903 he was promoted to general superintendent; on November 15, 1906, to general manager, and on December 3, 1909, at the time of the separation of the Rock Island and Frisco systems, he was made vice-president and general manager of the Chicago & Eastern Illinois, and of the Evansville & Terre Haute, which has since been absorbed by the C. & E. I.

Both in his work for his own company and as chairman of the General Managers' Association, Mr. Jackson has had a great deal of experience in labor negotiations, for which he has

shown marked qualifications; and in 1910 he was appointed by Governor Deneen a member of the Employers' Liability Commission for the state of Illinois. The fact that he has risen from the ranks, together with his naturally kindly disposition and his democratic manner largely accounts for his success in dealing with subordinates, in all ranks, with whom he has always been popular. A very hard worker himself, he requires good service from those working for him, but does so with a consideration that is calculated to inspire loyalty, and it is doubtful if he has ever required any of his subordinates to work as many hours a day or as many days a week as he does himself. In all respects he is a strong man, and his presence in the management, as one of the receivers, with his knowledge of the property and his popularity, gives assurance that the Chicago & Eastern Illinois will continue to be a well-managed institution.



W. J. Jackson.

### AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.

The twenty-fourth annual convention of the American Association of Demurrage Officers was held at the Blackstone hotel, Chicago on May 20 and 21. President E. E. Mote, manager of the Pacific Car Demurrage Bureau, San Francisco, presided, and 21 members out of a total membership of 25 were in attendance. After a considerable discussion resolutions were adopted to be referred to the American Railway Association, recommending an increase in the demurrage rate for interstate business throughout the United States from \$1 to \$3 per car for each day after the expiration of 48 hours free time; the elimination of the average agreement contained in the uniform demurrage rules now generally in effect, which allows time less than 48 hours required for loading and unloading to be used as an offset to time over 48 hours during the same month; also the elimination of the rules providing for an allowance on account of weather conditions after the expiration of free time.

The proposal to advance the demurrage rate was based on the belief of those present that a higher demurrage rate would greatly reduce the detention of cars by consignees, and thereby benefit both railway and shippers by increasing the efficiency of the car supply. It was also believed that a \$1 demurrage rate does not approximate the earning capacity of a car at any season of the year. The recommendation was based largely on the experience with a high demurrage rate in California, where rates of \$3 and \$6 have been in effect for several years on state business, and where the Interstate Commerce Commission has recently allowed an increase of the demurrage rate on interstate traffic to \$3.

Other recommendations were adopted providing for minor changes in the rules in the direction of improvement and clarification.

The resolution to eliminate the average agreement was based on the belief, stated frequently in the discussion, that it is taken

advantage of only by large shippers, and is of no benefit to the smaller shippers, besides causing many controversies. The elimination of the weather allowance was proposed on the ground that a free time of 48 hours is reasonable for all who provide proper facilities for loading and unloading, and that it operates as a discrimination in favor of those who do not make adequate provision as against those who do provide proper shelter for their freight. It was also declared that in large terminal districts, such as in Chicago, the weather allowance must be based solely on the word of the consignee, because weather conditions may vary in the territory.

By order of the state railway commission no weather allowance has been made in California on intrastate traffic for several years. President Mote and Secretary-Treasurer A. G. Thomason, demurrage commissioner, Boston, Mass., were re-elected. R. A. Taylor, manager of the Virginia and West Virginia Demurrage Bureau, Richmond, Va., was elected vice-president to succeed W. E. Backensto. It was decided to hold the next annual convention at St. Louis on May 19, 1914.

### EXTRACTS FROM THE ANNUAL REPORT OF THE LITTLE MIAMI RAILROAD FOR 1852.\*

During the 10 years that our road has been in operation, the number of passengers have increased from 6,400 carried in 1843, when a part only of the track was in use, to 212,687 for the year just finished, the whole number carried in the 10 years being nearly one million of persons.

During the 10 years of the operation of our road, but two occasions have occurred resulting in loss of life by passengers; on one of which a passenger was killed by attempting to get upon the train while it was in motion; on the other a passenger persisted in mounting to the roof of a car after being repeatedly warned by the conductor not to do so and without the knowledge of the conductor at the time, and was swept off in passing under a bridge. In the 10 years, and in carrying nearly a million of persons, not a life has been lost by accident to the trains or neglect of persons in our employ.

Our depot arrangements at Cincinnati will be of the most liberal character, and will afford convenient accommodation for any aggregate of business however large which may be concentrated here. To this end we have secured extensive grounds binding upon the river and upon Front street, affording easy access from the streets of the city on one side and from the river for our own landings on the other. Any extent of buildings which may be required for depot and warehouse purposes, with all the facilities for the transportation of every description of railroad business, may be accommodated upon our ground which has been purchased for the purpose.

Of other railroads with which we are or may become indirectly connected, as partakers of the general prosperity attendant upon the successful and harmonious working of a wide-spread system of railroad intercourse, we need only remark in general terms as their progress and statistics are well known. The State of Indiana is becoming rapidly chequered over by railroads, unit-

ing her most distant parts with each other and opening free intercourse between the lakes and Ohio river in one direction, and with Ohio and Illinois in the other. The railroads of Ohio will soon be connected with those of Indiana by means of the Ohio and Mississippi Railroad, the Lawrenceburgh and Greensburg, the Cincinnati, Hamilton & Dayton, and various others. Kentucky, which will soon be connected with our system by tracks leading from Covington to Lexington and to Louisville, is reaching her arms to the south. Through her borders, the connection with Nashville is not far distant and the further connection with the Atlantic Ocean at Charleston and with the southwestern states bordering on the Mississippi, are now within the range not only of probability but of early expectation.

JACOB STRADER, President.

Trains have been run with great regularity and entire safety to passengers with but a single exception. On the 19th of November a collision occurred at the curve one mile above Corwin between the express train bound down and the upward mail train, in consequence of inattention to the rules governing the running of trains on the part of the conductor and engineer of the express train. It appears that on leaving Spring Valley the express train had from 14 to 15 minutes to make Corwin, which, under ordinary circumstances, would have been sufficient, but the train consisted of 12 cars, with which the locomotive could not make the time. The conductor became confused; the train was not stopped as required by the rules applicable to such circumstances, and, in consequence, the collision occurred. No blame attaches to the conductor and engineer of the mail train—Messrs. Fuller and Davis—they were running in their time, and exercised due care. I am thus particular in stating the facts as unfounded and injurious charges have been made against them. The conductor and engineer of the express train have been dismissed from the service of the company. One gentleman was severely but not dangerously bruised and two others slightly, in this collision. With these exceptions, as far as known no other passenger has received injury during the year; nor indeed has any passenger lost his life or received serious injury since the opening of the road for travel who has kept himself inside of the passenger cars. Nearly every accident arises from neglect to obey this well-known rule.

SPECIAL ACCIDENT TRAINS IN GERMANY.—The Baden State Railways have recently put in service a number of relief or "accident" trains. Each train consists of three cars, namely, an ambulance car, a tool car, and a service car, the last-named being provided for the accommodation of the officials and men engaged, including doctors, members of the mechanical and maintenance of way departments, and a breakdown gang. The trains are stationed at suitable points on the railway, which is divided into special districts for this purpose. The ambulance cars have double sides, roofs and floors, and the space between the double floors is filled with cork in order to reduce noise and to act as heat insulators. They comprise a ward room, surgery, and have an operating table. The tool cars are fitted up with tools and appurtenances, including acetylene flare generators, re-railing devices, and a host of other appliances. The service cars are equipped with separate rooms for officers and men, telephone apparatus, a kitchen, lavatory, etc.

\*We are indebted to Mr. J. S. May, superintendent of the Buffalo & Susquehanna, for the opportunity to see this report.—Ed.

TABLE B.—COMPARISON OF THE COST OF CONSTRUCTION AND OPERATION UPON EIGHT OF THE LEADING RAILROADS OF THE UNITED STATES, WITH THE LITTLE MIAMI RAILROAD, COMPLETED FROM THEIR MOST RECENTLY PUBLISHED REPORTS.

Name of road.	Length in miles.	Cost of road and equipment.	Cost per mile.	Receipts from passengers.	Receipts from tonnage, mails, etc.	Total receipts.	Expense exclusive of interest.	Ratio per cent. of exp's to rec'pts.	Cost in cents per mile run.
1. Boston & Lowell and branches.....	27½	\$1,945,646	\$70,751	\$174,241	\$234,912	\$409,153	\$268,030	68.5	106.97
2. Boston & Providence and branches.....	53	3,469,599	65,464	236,730	740,666	377,396	177,776	43.9	76.28
3. Boston & Worcester and branches.....	68¾	4,862,748	70,731	403,362	340,560	743,922	393,687	52.9	84.39
4. Eastern Railroad.....	58¾	3,120,392	53,569	372,168	729,886	502,054	195,399	38.1	67.27
5. Western Railroad.....	156	9,953,759	63,806	603,207	750,687	1,353,894	597,756	44.2	77.17
6. Georgia Railroad.....	213	3,930,057	16,766	244,029	484,894	728,923	302,437	41.4	84.52
7. Boston & Maine and branches.....	83	4,090,452	49,258	408,851	224,244	633,095	305,068	45.2	66.05
8. Baltimore & Ohio Railroad.....	786	10,096,571	54,283	314,914	1,010,649	1,325,563	710,179	53.6	46.85
9. Little Miami Railroad.....	83¾	2,634,157	31,546	270,137	256,609	526,746	212,476	40.2	68.30



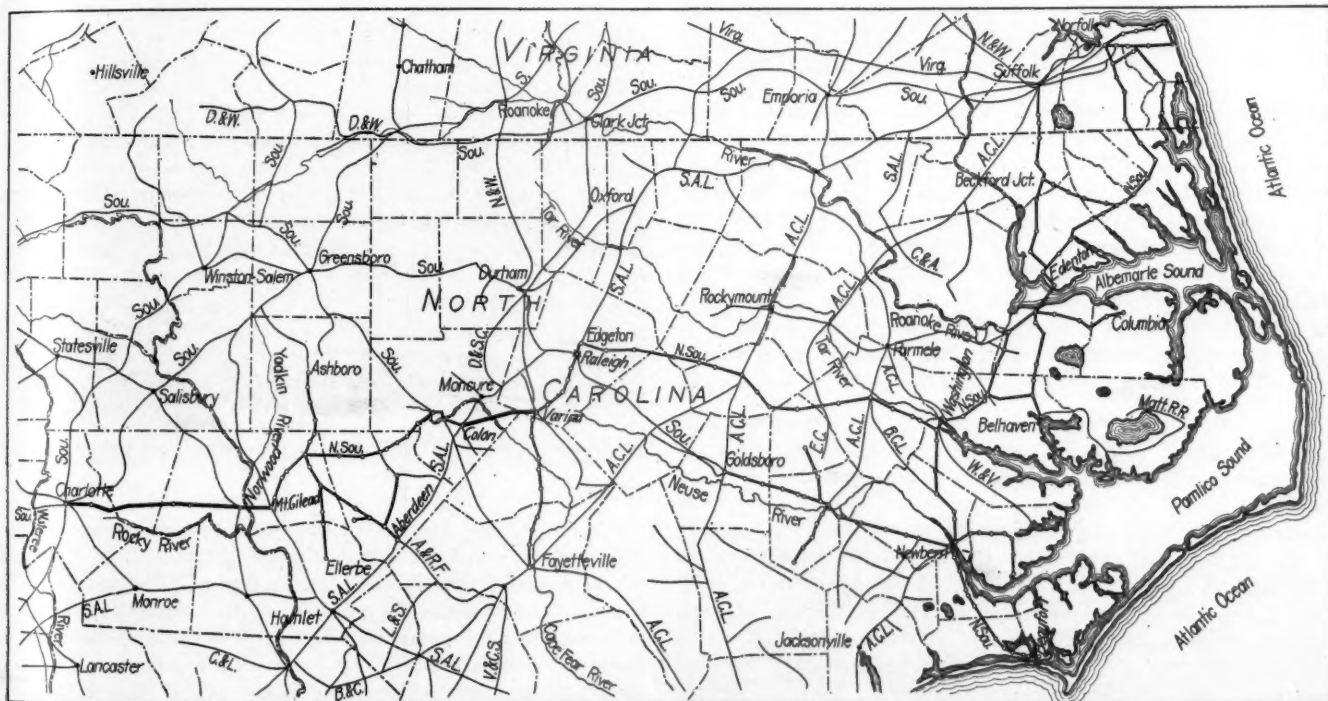
# NEW EXTENSION OF THE NORFOLK SOUTHERN.

Consolidation and Connection of Three Short Roads West of Raleigh, N. C., and Construction of New Line to Charlotte.

The Raleigh, Charlotte & Southern, controlled by the Norfolk Southern, was organized in 1911 to operate three recently acquired lines in central North Carolina with an aggregate mileage of 215 miles, and to build about 75 miles of railway to connect these lines with the Norfolk Southern and form an extension to Charlotte. As the system operated at present by the Norfolk Southern is quite compact and only comprises about 600 miles of road, the present project represents an expansion which is important both on account of the mileage added and the new territory which it will develop. If the policy of expansion by consolidation of existing short lines, indicated by this purchase of three small roads soon after the present management took total control of the property, is to be carried out, the large southern roads may soon have another active competitor as pointed out in an editorial in the *Railway Age Gazette* of January 5, 1912.

The three lines consolidated were the Raleigh & Southport, which operated from Raleigh southwest to Fayetteville; the Aberdeen & Asheboro, connecting the two points which give it

after its construction, that such development is profitable to the railway. While North Carolina has a comparatively large railway mileage for its population, the average density of population is low, making the mileage per square mile of area in the state comparatively low. Much of the present mileage is not designed to develop the resources of the state but forms part of north and south trunk lines reaching south Atlantic seaports. Of about 40 companies operating in North Carolina, more than half the mileage is held by four companies, the Southern; Atlantic Coast Line; Seaboard Air Line, and the Norfolk Southern. No one of the other companies operates as much as 100 miles of line and a great many of them are purely local enterprises. In order to develop the state, there is an urgent need for more east and west lines to connect the interior points and give them direct communication with the seaboard. The present line of the Norfolk Southern to Raleigh has done much to improve conditions in the eastern half of the state and when the new system west of Raleigh is connected with the eastern lines, it is expected that the development in that portion of the state will be very



Map of Norfolk Southern, Showing New Extension to Charlotte.

the name and including a branch to Mt. Gilead; and the Durham & Charlotte, running from Colon to Troy, where it connects with the A. & A. The new company has under construction a connecting line from Varina, just south of Raleigh on the old R. & S., west to Colon, the terminus of the D. & C., a distance of 22.7 miles, and an extension of the A. & A. from Mt. Gilead to Charlotte, 52.7 miles. When these lines are completed, the Norfolk Southern will have a direct through line from Charlotte to Norfolk, which will enable it to compete with the Southern and the Seaboard Air Line for the large amount of traffic originating at Charlotte, which is a town of over 35,000 inhabitants and is known as the best manufacturing center in the state.

The new lines are located with particular attention to the development of the country which they traverse, as the management is convinced from its experience with the line from Washington, N. C., to Raleigh, acquired by consolidation in 1906 soon

noticeable. The country traversed by the Norfolk Southern is largely timber land, the lumbering operations furnishing about 50 per cent. of the road's traffic. After the timber is cut, the country settles rapidly, and as the soil is fertile, the farming communities which spring up are very profitable sources of traffic.

The standards of construction on the Norfolk Southern, in common with most of the roads in the southeast, excepting the few main trunk lines, are not high, and the line is capable of handling only comparatively light traffic. But at present it does not meet serious competition and as it has a high ton mile rate it is earning about \$5,000 a mile in operating revenue. The completion of the system west of Raleigh should make the operation of the line from Raleigh to Norfolk considerably more profitable than it has yet been.

Since the country west of Raleigh is comparatively rough and the old lines were built to low standards of grade and

curvature, 1.3 per cent. grades are used freely on the new lines and curves up to 5 deg. are common, with some 6 deg. curves in exceptional cases. The grades on the line east of Raleigh are considerably lighter so that all trains will have to be remade at Raleigh. Some revision of the old line from Raleigh to Varina is being made and other improvements may be undertaken later on other portions of the line.

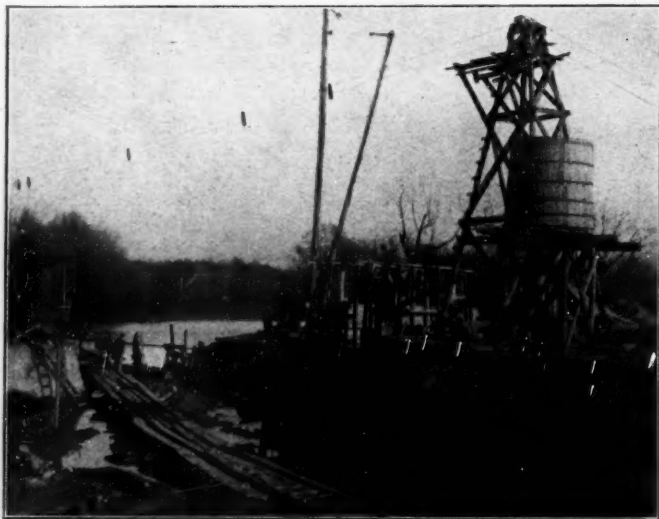
The entire system is single track, the roadbed is dirt ballasted



Typical Corrugated Iron Pipe Culvert with Concrete Head Wall.

and laid with 70 and 80 lb. rails. As drainage is the most essential feature of maintenance on such a line, the location is carefully made to secure the best drainage, ample waterway openings are provided and side ditches are very carefully maintained. Cast iron pipe is used for culverts in sizes up to 36 in., three lines of pipe being laid in cases where the opening furnished by a single or double line is not enough. Corrugated iron pipe is also used in sizes up to 48 in. Concrete headwalls are placed on the corrugated iron pipe and the 42 in. and 48 in. sizes are encased in square concrete boxes having a minimum thickness of 1 ft. over the pipe. The standard headwall for one of these pipe culverts is shown on one of the accompanying photographs.

As Charlotte will be a highly competitive point, a well located



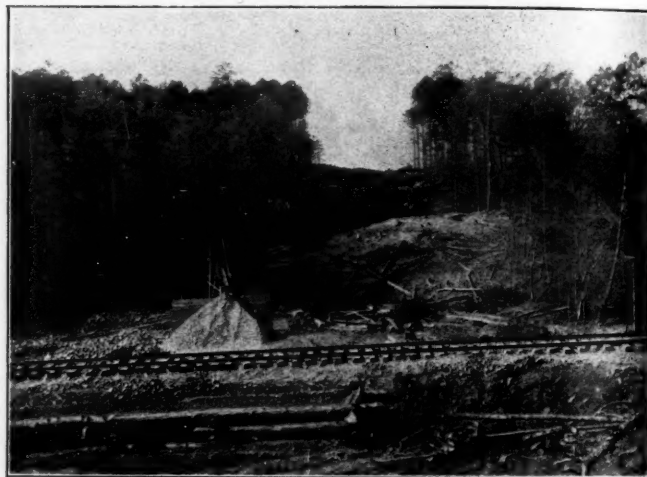
West Bank of Cape Fear River, Showing Forms for Shore Pin, Cable Tower and Pit from Which Puddling Clay Was Taken.

terminal and entrance to the city was essential. This has been secured by paralleling the Southern through the eastern part of the city, enabling the new line to reach the heart of the city through the most important industrial section. There is some local agitation for a union passenger station but no decision has yet been reached in regard to this matter.

On account of the comparatively low standards to which the line is being built and the character of the country through

which it runs, the earthwork is not heavy. On the section from Varina to Colon the material is mostly loam or gravel with a little rock, the latter being disintegrated in many cases so as to be soft enough to plow. On the eastern end of the Mt. Gilead to Charlotte section, rock predominates, and on the western end where the work is the lightest, little material but earth is encountered. Steam shovels are used for many of the cuts, but in general these are of the smaller sizes, some as small as 20 tons being used with good results. Wheel scrapers and mule carts are the two most common means of handling the light work. No station work was let, although the character of some of the grading would have suggested that method for similar construction in the north. Apparently, contractors do not find southern labor well adapted to handling these small contracts. Steam shovel cuts are 22 ft. wide with an 18 ft. roadbed, although in many cases this width has been increased to make the quantities balance or to get an easier slope. Some of the rock cuts were allowed to stand at slopes of  $\frac{1}{2}$ :1, or in some cases  $\frac{1}{4}$ :1. Fills are 16 ft. wide.

The maximum haul for material on the Varina-Colon line is about 7 miles and on the Mt. Gilead-Charlotte line about 15 miles. One contractor on the eastern section has tried a 5 ton



Overhead Crossing of the Winston-Salem Southbound near Norwood, N. C.

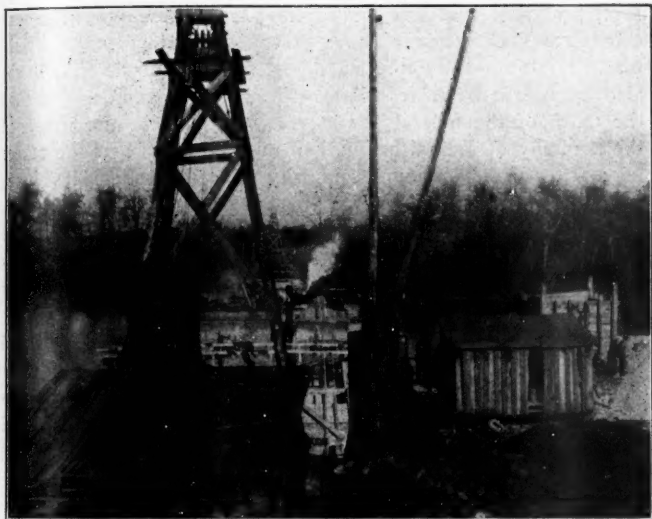
truck for hauling in material but finds that its services on the hilly country roads at a considerable distance from a garage where repairs can be made is not all that could be wished. The difficulty and expense of getting teams from local farmers, however, makes some other means of hauling almost a necessity at times. Demands for \$4 a day for a team are not at all uncommon and teams are often scarce at any price. One of the contractors on the western section tried a traction engine with about the same experience as was had with the motor truck. The time lost by such a machine in this service seems to be a considerable item and on account of the large investment and the capacity which the machine has for work in proper condition, such delays are quite expensive. In one case the traction engine was used to pull a string of narrow gage dump cars running on their own wheels over the dirt roads, partially loaded with coal for steam shovels, provisions for boarding camps, etc. The general contractor on the Varina-Colon work is the Lane Brothers Co., Alta Vista, Va., and on the Mt. Gilead-Charlotte work the Kenefick-Hoffman Co., Kansas City, Mo.

The three most important bridges on the lines are over the Cape Fear river on the eastern section and over the Pee Dee river and the Rocky river on the western section. The Cape Fear river crossing consists of three 150 ft. through truss spans with 1,300 ft. of approach trestle on the east end and 100 ft. on the west end. In common with the other steel structures on this line, the trusses were designed for Cooper's E50 loading. There are two shore piers and two river piers 25 ft. 6 in. x



7 ft. 6 in. and 26 ft. x 8 ft., respectively, over copings. They are of mass design without reinforcements. The sides are battered uniformly  $\frac{3}{4}$  in. per ft., the shore piers being 23 ft. high and the river piers somewhat over 40 ft. The footings of the latter are about 18 ft. below mean low water. The shore piers are supported on 44 piles, spaced 2 ft. 3 in. x 2 ft.  $5\frac{1}{2}$  in. The concrete in the footings and body of the piers is 1:3:6 and in the copings 1:1:2.

A very complete concrete plant was installed at this bridge. The river piers were placed inside puddle cofferdams, the clay for puddling being taken from the west river bank. The concrete mixer was located close to the west shore pier, the concrete being carried out to the river piers in buckets supported by a carrier running on an overhead cableway. A trestle was used to carry the puddling clay from the bank to the nearest pier and the cableway for taking it to the second cofferdam. A 1 yd. Smith mixer was installed at an elevation high enough to allow it to dump into the concrete buckets by gravity and at the same time low enough to be fed from the storage piles on the sloping bank back of the plant without materially elevating the aggregates. The concrete buckets were just large enough to hold one batch from the mixer. As the mixer was



Mixing Plant, Engine House and Cable Tower on West Bank of Cape Fear River.

about 40 ft. from the center line of the bridge over which the cable was supported, the buckets were handled from the mixer to the center line on a small car running on a short section of narrow gage track. This car was long enough to hold two buckets side by side so that the empty bucket returning from the pier could be dropped by the carrier on to the car which already carried a full bucket from the mixer. This exchange of buckets could be made very rapidly, thus eliminating practically all loss of time. The empty bucket received from the carrier was filled at the mixer while the other bucket was being emptied at the pier.

The concrete was dumped from the buckets into a square wooden hopper with a chute about 12 in. square, the bottom of which was kept close to the surface of the concrete. The water level was kept low in the dams by operating a centrifugal pump as needed. A foreman and 8 to 10 men were required in the pier to place the concrete and spade back the surface. About 10 men were used to feed the mixer and, in addition to this gang, the shore plant required two men to push the small concrete car between the mixer and the cable; an engineer for the mixer, an engineer for the hoisting engine operating the cableway, and a fireman for the boiler which supplied steam both to the mixer and the hoisting engine.

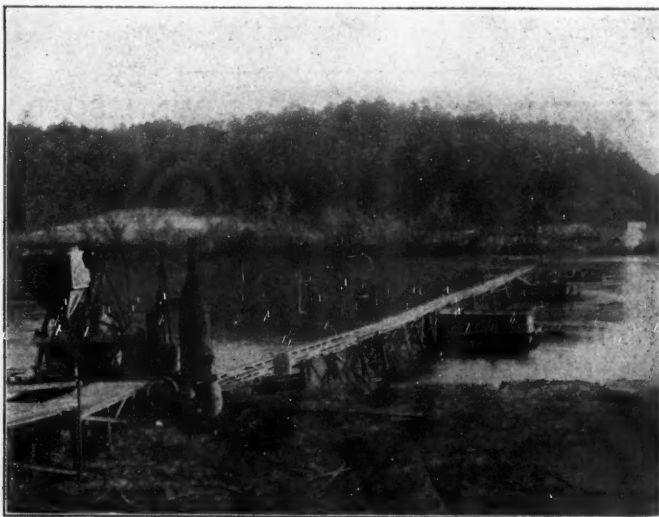
The Pee Dee river bridge consists of 80 ft. of trestle approach on the east end, eight 110 ft. deck plate girders, 221 ft. of trestle,

three 110 ft. deck plate girders and 140 ft. of trestle on the west end. The substructure included 13 concrete piers of the same design as those described for the Cape Fear river bridge, their height varying from about 30 to 35 ft. At low water stages only seven of these piers are in the channel, and as work was begun during the late summer when the water stage was only about 5 ft., it was only necessary to build cofferdams for these seven piers. The cofferdams were built up of Wakefield sheet piling



Coffer Dams for Two River Piers, Showing Material Cableway with Carrier Over Second Pier.

made of 1 in. x 6 in. boards. As the bottom of the river was rock, many loose stones were encountered in placing the piling, and by the use of these small piles the openings left in the walls by the deflection of piles on such rocks were much smaller than would have been the case if the ordinary 10 in. or 12 in. material had been used. In order to avoid delay to the work on account of ice or spring freshets, the concrete was placed in two stages, the top of the lower one being about 8 ft. above the footings,



Pee Dee River from West Bank. Lower Stage of First Two Piers Paced, Work Under Way on Third Pier.

which is well above the water level. It was possible to finish all of the piers up to this 8 ft. level before winter, and the upper portions could then be built regardless of river conditions. A low trestle was built entirely across the river to carry out form material and concrete, the trestle bents being set directly on the rock bottom. For the upper stage this trestle was raised to the full pier height by adding a second deck. The bond between the two stages of concrete was secured by setting irregularly

shaped stones at intervals in the upper surface of the lower stage, allowing them to project from 6 in. to 1 ft. so as to form a firm bond with the new concrete to be set later. A break-water consisting of a timber crib filled with rock was used to protect the upstream end of each puddle dam.

The concrete, of which about 3,500 yds. were required, was mixed in two plants, one on each shore. Chicago cube mixers of 17 cu. ft. capacity were used, being fed by wheelbarrows and dumped into push cars running out over the trestle. These cars, which were built by the contractor, were designed to hold one batch from the mixer and were equipped with a small end door in the square wooden body through which concrete could be dumped into cross chutes to guide it to place in the piers.

The sand and stone for concrete were secured locally at a considerable saving in cost. Sand was dredged from the river by hand into barges and stored at both mixer plants. At the beginning of the work some rock was shipped in from the nearest stone quarry at a cost of 90 cents per ton f. o. b. at the quarry, 50 cents for freight and 85 cents for hauling from the station to the bridge site, a total of \$2.25 per ton or about \$3 per cu. yd. Careful inspection of local stone showed that a very hard slate could be secured close to the east bank which broke up very well and made an excellent aggregate for concrete. A quarry was accordingly opened in this material and the rock was broken at the bridge site. The cost of quarrying and hauling to the bridge varied from 75 cents to \$1 per yd. and plenty of negro laborers could be secured to break the rock for 75 cents per yd. A force of 25 men would break from 50 to 55 yds. per day, and in some cases an exceptionally industrious man could break as high as 4 yds. a day. The contractors on this bridge were Hancock & McMahon, of Lawrence, Kan.

The Rocky river bridge consists of three 100 ft. deck plate girders with short trestle approaches. The four piers are of the same design as those on the other bridges and are of about the same height as those of the Pee Dee river structure. There were no unusual features in the plant or method of building this bridge.

The new line is expected to be ready for operation this summer. The construction work, including roadbed, bridges and right of way, is being handled by C. K. Conard, construction engineer, the track work being under the supervision of F. L. Nicholson, chief engineer, and D. W. Lum, consulting engineer.

## SUPREME COURT DECIDES MINNESOTA RATE CASE.

The Supreme Court of the United States on Monday of this week, in a decision by Mr. Justice Hughes, in the long-pending cases which were brought to test the right of the state of Minnesota to reduce freight and passenger rates, when such reduction would affect interstate rates, upholds the state's power, in this respect, to the extent that, so long as Congress has not taken action on the conflict between federal and state powers, a state may regulate rates freely unless in so doing it reduces revenue to an extent which would amount to confiscation of the carrier's property. The decision is unanimous. As to the Northern Pacific and the Great Northern the reduced rates are by this decision justified; but in the case of the Minneapolis & St. Louis the court holds that the state's action is unwarranted, the rates prescribed being confiscatory.

In their main contention, that the rates prescribed by the state commission constituted an interference with interstate commerce, and, to that extent, were invalid, the railroads met with defeat. The Supreme Court upheld the right of the state, intimating that if any correction is to be made it must be done by Congress and not by the courts.

The opinion consists of 31,000 words. The summary of Justice Hughes says:

"1.—The constitution gives congress an authority at all times adequate to secure the freedom of interstate commercial inter-

course from state control, and to provide effective regulation of that intercourse as the national interest may demand.

"2.—The commerce that is confined within one state, and does not affect other states, is reserved to the state. This reservation is only of that power which is consistent with the grant to congress. The authority of congress extends to every part of interstate commerce, and to every instrumentality or agency by which it is carried on; and the full control by congress over the subjects committed to its regulation is not to be denied or thwarted by the commingling of interstate and intrastate operations.

"3.—Even without action by Congress, the commerce clause of the constitution necessarily excludes the states from direct control of subjects embraced within the clause which are of such nature, that, if regulated at all, their regulation should be prescribed by a single authority. There is thus secured the essential immunity of interstate intercourse from the imposition by the states of direct burdens and restraints.

"4.—But there remains to the states the exercise of the power appropriate to their territorial jurisdiction in making suitable provision for local needs. The state may provide local improvements, create and regulate local facilities, and adopt protection measures of a reasonable character in the interest of the health, safety, morals, and welfare of its people, although interstate commerce may incidentally or indirectly be involved. Where matters falling within the state power, as above described, are also by reason of their relation to interstate commerce within the reach of the federal power, congress must be the judge of the necessity of federal action, and until congress acts the states may act. The paramount authority of congress enables it to intervene at its discretion for the complete and effective government of that which has been committed to its care, and for this purpose and to this extent, in response to a conviction of national need, to displace local laws by substituting laws of its own.

"5.—State regulation of railroad rates began with railroad transportation. The authority of the state to prescribe what shall be reasonable charges for intrastate transportation is statewide, unless it be limited by the exertion of the constitutional power of congress with respect to interstate commerce and its instruments. As a power appropriate to the territorial jurisdiction of the state, it is not confined to a part of the state, but extends throughout the state—to its cities adjacent to its boundaries as well as to those in the interior of the state. If this authority of the state be restricted it must be by virtue of the actual exercise of federal control, and not by reason merely of a dormant federal power, that is, one which has not been exerted.

"6.—Congress in an act to regulate commerce expressly provided that the provisions of the act should not extend to transportation wholly within one state. Having regard to the terms of the federal statute, the familiar range of state action, at the time it was enacted, the continued exercise of state authority in the same manner and to the same extent after its enactment, and the decisions of this court recognizing and upholding this authority, the court finds no foundation for the proposition that the act to regulate commerce contemplated interference with the authority of the state to prescribe reasonable rates for the exclusively internal traffic throughout the extent of its territory. Neither by the original act, nor by its amendment, has congress sought to establish a unified control over interstate and intrastate traffic; it has not set up a standard for intrastate rates or prescribed or authorized the federal commission to prescribe either maximum or minimum rates for intrastate traffic. The fixing of reasonable rates for intrastate transportation was left by the act where it had been found, that is, with the states and the agencies created by the States to deal with that subject.

"7.—Under the established principles governing state action, Minnesota did not transcend the limits of its authority in prescribing the rates here involved, assuming them to be reasonable intrastate rates. It exercised an authority appropriate to its



territorial jurisdiction and not opposed to any action thus far taken by congress.

"8.—The interblending of operations in the conduct of interstate and local business, by interstate carriers, and the exigencies that are said to arise with respect to the maintenance of interstate rates by reason of their relation to intrastate rates, are considerations for the practical judgment of congress. If the situation has become such that adequate regulation of interstate rates cannot be maintained without imposing requirements with respect to such intrastate rates of interstate carriers as substantially affect interstate rates, it is for congress to determine, within the limits of its constitutional authority over interstate commerce and its instruments, the measure of the regulation it should supply.

"It is the function of the court to interpret and apply the law already enacted, but not, under the guise of construction, to provide a more comprehensive scheme of regulation than congress has decided upon. Nor in the absence of federal action may effect be denied to the laws of the state enacted within the field which it is entitled to occupy, until its authority is limited through the exertion by congress of its paramount constitutional power.

"9.—On the issue of confiscation: The rate-making power is a legislative power and necessarily implies a range of legislative discretion. The court does not sit as a board of review to substitute its judgment for that of the legislature or of the commission, lawfully constituted by it, as to matters within the province of either.

"The question is whether in prescribing a general schedule of rates involving the profitableness of the intrastate operations of the carrier, taken as a whole, the state has exceeded the constitutional limit by making the rates confiscatory. The property of the railroad corporation has been devoted to a public use. But the state has not seen fit to undertake the service itself and the private property embarked in it is not placed at the mercy of legislative caprice. It rests secure under the constitutional protection which extends not merely to the title, but to the right to receive just compensation for the services given to the public.

"10.—In the cases of the Northern Pacific and Great Northern companies, on the examination of estimates of value and methods of apportionment, it is concluded that the proof is insufficient to justify a finding that the rates were confiscatory, and the decrees are reversed, with instructions to dismiss the bill in each case without prejudice.

"11.—In the case of the Minneapolis & St. Louis, it is found in view of the special facts appearing, that the margin of error in the estimates and calculations was not sufficient to affect the result. The decree in that case, adjudging the rates to be confiscatory, is therefore affirmed, with the modification that the members of the railroad and warehouse commission and the attorney general of the state may apply to the court, by bill or otherwise, as they may be advised, for a further order or decree whenever it shall appear that by reason of a change in circumstances the rates fixed by the state's acts and orders are sufficient to yield to the company reasonable compensation for the services rendered."

The opinion discusses at length the principles governing the valuation of railroad property for rate making purposes. It criticises the apportionment of value between interstate and intrastate business on a gross revenue basis; also the apportionment of expenses by regarding intrastate freight business as two and a half times as expensive as interstate. The lower court's theory of arriving at a fair value by finding "the reproduction cost new" is tested by inquiring how this theory worked on the value of the railroad's lands. Justice Hughes declared that the lower court was in error in adding 30 per cent. to the normal value of the land in some instances and 200 per cent. at the big terminals in arriving at what the court considered the "cost of reproducing its property."

In criticizing the apportionment of valuation between interstate and intrastate business on the "gross revenue basis," Jus-

tice Hughes said that the division should be made according to the use that is made of the property. He declared that this use could not be measured by the return, when the return itself was in question.

"If the return be taken as the basis," said he, "then the validity of the state's reduction of rates would have to be tested by the very rates which the state denounced as exorbitant." He added that it would not be impossible to ascertain some kind of "use units" by which the property could be divided both between interstate and intrastate business on the one hand and between passenger and freight business on the other. He did not point out what this "unit" would be.

### THIRTY-MILE ELECTRIFICATION ON NORFOLK & WESTERN.

The Norfolk & Western has authorized and is proceeding with the electrification of a thirty-mile section of its main line from Bluefield, W. Va., to Vivian, W. Va. The electrified section constitutes practically a separate gathering division for the coal traffic from the Pocahontas region and comprises about 85 miles of track. The division is double track throughout except in the Elkhorn Tunnel and with a large amount of passing sidings and branches into the coal workings. The grades are from 1.5 to 2 per cent. eastbound to and through the summit tunnel, ten miles; thence falling for about a mile and then a ruling ascending grade of about .4 per cent. for twelve miles to the east end of the division at Bluefield. The heavy coal business originates west of the summit and is in large part hauled eastward over these grades. The coal trains are filled out generally to a weight of 3,250 tons and are hauled over the grades at about 7½ miles an hour by three Mallet engines, one at the head end of the train and two pushing.

It is not the intention at present to conduct the through merchandise freight or the passenger service by electricity, the electric service being confined to traffic designated as "tonnage trains" originating on the electrified section. These trains, of 3,250 tons each, will be electrically operated by head engines and pushers at a speed of 13 miles an hour up the heaviest grade. There will be about twenty trains a day, or 65,000 tons.

An overhead electrical conductor will be used, the local conditions precluding the use of the third rail. The characteristics of the current to be used in the locomotives have not yet been decided on as plans and estimates are being made for the use of either alternating or direct current locomotives according to which design proves most adaptable to the service and cheapest in first and operating costs.

Electric power will be generated in a steam power house to be erected by the company at Bluestone, about one-third the way from Bluefield to Vivian. This power house will have an installed capacity at present of 24,000 kw. All work is to be completed for service in the summer of 1914.

It will be seen that the local conditions are especially favorable for electric haulage. The traffic is dense and of heavy train units moving at fairly uniform intervals over a section of the main line, which is practically a separate engine division at present and can be conducted in the same way electrically without increasing the cost of engine service on the other sections of the line. Electric power can be generated at an unusually low cost because of the fact that excellent coal is obtainable at the point of origin. The train service is such that a minimum of electrical equipment can perform the haulage in practically continuous service. There will be fewer engine crews per train than with steam and the speed over the division will be nearly double that possible with the present steam equipment. Elimination of smoke in the Elkhorn Tunnel will be an important incidental benefit from electric operation.

Gibbs & Hill, consulting engineers, Pennsylvania Station, New York City, are the designing and constructing engineers for this work.

# LABOR UNIONS AND THE RAILROADS.\*

Means Used by the Organizations to Further Their  
Ends, and Effects of Public Attitude Toward the Situation.

By J. O. FAGAN,

Author of "Confessions of a Railroad Signalman," etc.

From the beginning of time society and individuals seem to pass through certain clearly defined changes or stages of progress. In the Middle Ages, for example, the letting of blood was a sort of universal cure-all for every conceivable mental and physical ailment. In the case of a man supposed to be possessed with a devil, they pumped him nearly dry. Under a somewhat similar supposition, this is exactly the case with the railroads today.

Most everybody is taking a hand in the game. Illustrations permeate the railroad business from beginning to end.

For example, it is highly improper for a railroad to pay extravagant prices for sand lots, but in selling to a railroad the question of value cuts a very small ethical figure. It is the same thing with damages, rebates, professional services, and financial behavior in general—a railroad pays through the nose, a private citizen squeezes out his payments through a wringer. The man who would not either intentionally, incidentally, or instinctively demand from a railroad for his land damage, his grass fire, or his internal injury, modestly speaking, say twice as much as he would from his fellow citizen, such a man I say is more worthy of honorable mention than a Chinese ancestor.

Some time ago a farmer sued a railroad on account of the dust kicked up by the trains in passing his homestead. He contracted hay fever, so to speak, and was awarded substantial damages. Again, a young man in a hurry to greet his sweetheart tumbled prematurely off a passenger train running into a station. The result was a sort of twisted nose. By and by the girl "shook him" on account of his strange appearance. Whereupon he sued the young lady for breach of promise, and incidentally, the railroad.

Now, this kind of business is not confined to legislation or juries. It is a state of mind or an atmosphere that calls for reform just as well as do crooked financial operations. In Massachusetts the other day it was discovered that 25 per cent. more people than the total capacity of the train that was concerned in a certain collision had sent in claims and received indemnity.

Now in this sort of hue and cry against railroads for their money or their lives the Interstate Commerce Commission occupies, as it seems to me, a very peculiar and questionable position. As a regulative agent in the matter of rates and so forth it exercises a reasonable and necessary function, but as a railroad manager or assistant manager the commission is a misfit.

The railroads today are suffering from a carnival of fines. If I drive a team up to a street crossing and the policeman gives me the tip and the horse is willing I go ahead. But if the horse happens to drop dead it is not at all likely the policeman will have me up in court for disobedience. But on the railroads you won't get off so easy. You cannot qualify or modify any kind of an interstate commerce law. Neither the elements nor the tremendous intricacy of the railroad business make a particle of difference in the execution of justice as applied to the railroads. Every offense avoidable or unavoidable cries to heaven for a fine. This rigid interpretation of their duty on the part of the Interstate Commerce Commission drives the railroads into the courts at inconceivable expense almost every day in the year to defend their exchequers from unreasonable legislation and overzealous Interstate Commerce Commission inspectors. But the Interstate Commerce Commission is not only unreasonably severe in hunting up troubles and imposing fines, but in its ignorance or neglect of the first principles of management it undermines the very foundation of the business upon which good service to the public is dependent.

Take a very simple and graphic illustration. Some time ago an express passenger train on the New York, New Haven & Hartford Railroad was derailed near Bridgeport, Conn. Fourteen passengers and employees were killed and forty-five passengers were injured in this accident. After a thorough investigation the Interstate Commerce Commission in its report summed up the situation as follows:

(1) This accident was caused by a disregard on the part of the engineer of signals and rules provided by the railroad company to prevent the occurrence of such accidents.

(2) The signals and rules provided by the railroad company for the prevention of such accidents were adequate had they been observed.

(3) The tracks and switches were substantially constructed and safe for the train movement made had the rules been observed.

Here, then, in the words of the report, we have an absolutely sane and safe situation. The obvious duty of the commissioners as public servants was to take up and look into the human or labor side of the problem and to strengthen the management in its efforts to maintain discipline and the proper observance of rules. But no—as a matter of fact this commission representing federal authority is more afraid of the human or the labor problem on railroads than the devil is supposed to be of a tailor. So in recommending preventives for such accidents the commissioners notified the railroad as follows:

That in all situations where accidents are likely to occur through the non-observance of enginemen of signals or rules calculated to insure safety, automatic train control apparatus should be provided to insure that trains will be brought to a stop in case the signals or rules are not properly observed.

Now, every switch, signal and bumping post in the United States is a situation where accidents are likely to and do occur through the non-observance of rules; so you can imagine the expense bill the commission, in dodging the human or labor problem on railroads, carelessly imposes on the management.

Furthermore, railroad managers today are threatened with imprisonment for failure to live up to this and other recommendations of a similar nature. The personnel of the Interstate Commerce Commission, it must be remembered, does not include a railroad manager either directly or indirectly, consequently the railroads are at all times being saddled with experiments, recommendations and orders from inexperienced sources; that is to say, from men who are not daily and unceasingly working out practical railroad problems from the managing side of the business. Here at last, then, we are face to face with the interests of the people in the labor problem on our railroads.

Now, on every railroad in this country there are two great streams or sources, either of influence or authority, by means of which it becomes everywhere possible to move trains, regulate traffic, secure revenue, pay wages and keep the different and complex departments of the railroad business in motion. I refer to the work, function and spirit of the manager and the employee.

Management, of course, should be conducted on business principles; that is to say, as scientifically as possible. But as a matter of fact the managing department on railroads is scientifically conducted only in spots. Management on railroads cannot be scientifically conducted because it is not clothed in any wide or sufficient sense with the necessary authority. In other words, it is actually under the thumb of a number of extraneous influences, such as public opinion, national and state regulation, and many other social and industrial forces which criticise, attack and try to mold it from every conceivable quarter.

But now turning to the other arm of the service on railroads we find labor, as I have said, scientific in every fibre of its trunk and branches, for the very good reason that it has a "What

\*Abstracted from an article in the New York Times, May 25.



to do" and "How to do it" department that has knowingly and very scientifically divorced itself from the outside world. In the history of the American railroads "labor" has never yet received even a jar or a check from public opinion, nor have the public interests been permitted to penetrate its solid and invulnerable front. The implied bargain between the rank and file and the executive department of labor places the latter in absolute and supreme control.

This implied bargain is not an industrial secret. It is to be read in every new schedule that is presented for the manager's signature. Shorn of its frills it reads something like this: "Get the money and shave the conditions." This is the scientific formula behind which is entrenched the solid vote of the rank and file.

The question naturally follows: What kind of people are these millions of highly organized and scientifically generated railroad men anyway? There can be but one answer. They rank very high, in fact they are among the very best and strongest fellows on earth. Only step outside the charmed circle of the railroadman's organized effort and you may well rub your eyes. True, these results have been obtained partially, at any rate, at the expense of society. Nevertheless, the verdict upon the whole must be: Good for him! He has simply treated his side of the question in a scientific manner. He has taken the scientific cue from Mr. Emerson, Mr. Taylor and Mr. Brandeis, and handled his concerns as these gentlemen in their arguments handle bricks and pig iron, and he has won out.

I have lived among railroad men for something like thirty years. As it seems to me from the educational, social and industrial standpoints, these men have almost, if not quite, solved the problem, as it concerns them, of wages and conditions. At any rate, they have solved the riddle of "What to get" and "How to get it." Industrially they are world wonders. For the ascendancy of labor on railroads is complete and the rewards are unlimited. What are known as the full crew bills afford a good illustration of the meaning and extent of this organized power. Some time ago when this legislation was getting under way a conference was held in a well-known manager's office. This manager said to the representatives of railroad labor:

"Look here, you need not go to the legislature for these extra men. Just tell me on what trains in this state or on this system these men are necessary and I will put them on. I will simply take your word for it and we can stop the agitation right here and now."

"Thank you," replied the labor men, "but you don't understand what we are driving at; it may not be necessary on your system, but it is in Virginia, and we propose to standardize legislation just as we have standardized the payroll and the qualifications of the men."

These bills, then, in the different states where they have already become law, compel managers to employ certain men at times and at points when and where they are not actually needed. Now, when a railroad manager puts an extra man on a train when his services are called for, the safety situation is then and there strengthened. But, on the other hand, when blindly he puts these extra men to work on twenty trains when it is only necessary to do so on one of them, as would certainly be the case in Massachusetts, in New Hampshire, and in most of the other states under these laws, the safety situation has actually been weakened in nineteen cases out of twenty.

As elsewhere, but particularly on the railroads, a busy and a half-busy man together make a weak combination. When you find two men in a switch tower, on an engine, or on a freight train, doing the work that one man can reasonably handle, under such conditions, I say, look out for an accident. The ideal safety situation, then, is when the worker under proper supervision is kept reasonably busy. Some one should certainly have the authority to weed out of the train service every suspicion of loafing. In these full crew bills and in all other matters relating to service and safety the public is going to reap just what it sows and encourages in legislatures and otherwise.

This, then, is the industrial riddle on railroads and the power behind it which management has to face and overcome. The scientific process from the manager's point of view, as it seems to me, at any rate, is surrounded by a maze of delays, difficulties, and obstructions. His experience, his ability, his public spirit count for very little. A suggestion of his in the public interest may or may not amount to anything. What he can do is already standardized and regulated. What he would like to do is subject to delay and infinite wrangle.

Labor, on the other hand, has a simpler and more effective method of progress. A short time ago we had an illustration in concrete form, the newspaper account of which was as follows:

President Mellen and other officials of the New Haven road have thirty days in which to give answer to the Brotherhood of Railroad Clerks on the pending wage and working rules agreement. Unless the road takes up this question with the clerks before the end of this period, a strike may be forthcoming. The lodges have sent in their ultimatum.

Practically nearly every department in the operating service on all railroads is run by rules and stipulations in this schedule. It covers wages, hours of service, and a host of working conditions. There are probably 1,700,000 employees on American railroads today, and of these at least 80 per cent. are organized and quite aggressive. They are also in most cases working under contracts or schedules which are jealously guarded. These schedules have worked wonders in bettering conditions and making wages higher and fairer.

But as the labor organizations have grown larger and stronger abuses here and there have got into this schedule which are not in the interests of the service or for the good of the public. One can get a good idea of the situation by glancing at the changes that have taken place in signal tower work in my own experience.

When I entered the service the situation was something like this: To begin with, a twelve-hour day and the pay about \$13 per week. Besides the lever work, the men were called upon to clean switches, fill and clean about fifty signal lamps, besides the necessary pole climbing in all weathers. Today we attend to the levers and to the train despatchers on the telephone, and that's all. We have an eight-hour day and a flat rate of about \$21 per week.

But there is another way of looking at this picture. In times gone by the pay for the "tricks," as they call them, was graded according to the work and responsibility; that is to say, the day man got a little more money than the "middle trick" man, and he in turn got a little more than the night man.

Today the tower is simply looked upon as Class No. So and So. Men, conditions and pay are all on a level, and in our last schedule the day man of thirty years' experience is called upon to change off periodically with the night man in order that the difference, industrially speaking, between the latest arrival and an expert may be utterly obliterated.

Again, time was when, if a towerman was incapacitated for heavy tower work by reason of age or sickness, the superintendent could look over his division and place the man somewhere else, according to the man's ability and merit. Today a night job on a crossing is about all a superintendent can offer such a man. He, the towerman, must remain on his own division in the tower service actually cornered in his little group. There may be a dozen vacancies on another division of the road, but they are not for him and the superintendent cannot help him. Every other avenue of organized labor on the railroad is closed to him in the same way. If there is no vacancy in his little group he can starve.

This situation has been brought about in the interests of the organization as a whole. It is typical of the fate that threatens the very first principles of social and industrial progress which American democracy is supposed to recognize and encourage.

Now, whatever our opinions may happen to be about the merits of the labor situation on the railroads, all will agree that the strike is today the universal weapon for enforcing concessions of any and every description. It is the "only way." In

the home, in the schools, in married life, as well as on the railroads, it matters not which way you look, this universal "holdup" meets you at every turn.

The policy it represents says to the common people, to the great mass of consumers, "Be with us or go hungry;" to the traveler, "Be with us or walk." To the politician as well as to the inoffensive voter it offers an unquestioning alliance or the private life. To employers, managers, inventors, pioneers and capitalists it holds forth no olive branch or alternative. To all non-affiliated industrial units such as these it merely suggests a return to the wood pile.

Under present conditions on railroads surrender under strike threats of this nature means bankruptcy; resistance means stagnation or chaos. What is to be done about it? This is the railroad riddle the people in this country have to face and answer in some way. The situation has recently been amusingly illustrated by the Kansas Legislature in its praiseworthy efforts to straighten out conflicting interests at a railroad crossing. As published in the newspapers, the proposed remedy is as follows:

"A bill is pending in the Kansas Legislature to 'regulate' the movement of trains at railroad crossings. 'When two trains approach a railroad crossing,' says the bill, 'both shall stop and neither shall go ahead until the other has passed by.'"

Such, as it seems to me, is a good illustration of the stagnation which threatens society on account of its spiritless and sentimental handling of the industrial situation. Where I come from there isn't enough moral courage exercised in the arbitration of industrial disputes to spank a two-year old baby.

Now I have followed, or tried to follow, the labor situation on railroads in some of its phases and ramifications from the first appearance of humane public interest in the business clear up to the present overshadowing dilemma of the strike. Looming up in the distance there is a fast-approaching deadlock. As a lasting proposition, regulated management and unregulated labor on railroads are inconceivable. What is needed, then, at the present day, is not less humanity or less justice, but more independence and backbone in public opinion. Freedom of speech in this country is nothing but a national "jolly" so long as people are afraid to spell "labor union" out loud or discuss the industrial situation without locking the door and stuffing the keyhole. As never before in the history of the country, democracy today needs the courage of its convictions. Graft on American railroads is a dying cause; the problems of service and labor are living and growing issues.

No form of socialism or government ownership will ever settle the problem of service on American railroads. People who look upon ideal working conditions and a liberal pay roll as a settlement of industrial unrest are invited to study the situation on our railroads.

God help the government when it is called upon some day to tackle this riddle! In trying to enforce satisfactory service, in trying to adjust the pay roll in the interests of all concerned, in its interpretation of rules and regulations, in its effort to manage the management and protect the interests of the employees, and finally as an arbitrator between conflicting classes and interests government interference on our railroads, so far, is a recognized failure. The blight of political influence and class legislation is over it all.

On the railroads today organized labor has the government, the management, and the people's interests all together on the dead run, and there can be no constructive rearrangement of the situation until the people recognize this primary fact. In all labor questions on railroads, in the very nature of the political situation, the United States government has always been represented by an "olive branch" diplomacy.

All questions of service, management, and the pay roll are now being settled by an appeal to this kind of a tribunal. Every controversy or difference of opinion on the railroads today is finally brought up for mediation under the Erdman act, and these government mediators have laid down the law in such

matters very emphatically in something like the following language:

"In the interests of the people, as we think, we have absolutely nothing to do with the right or wrong in these controversies; our business is simply to keep the wheels moving."

This is surely a pretty hard proposition for a manager to buck against when you ask him to be responsible for the safety of the traveling public. And yet this is exactly what arbitration of every description means and has meant to the railroads for the past ten years. So far as the railroads are concerned, arbitration in this country has always had a political "weather eye," and the sooner public sentiment catches on to this fact the better it will be for the interests of the people at large. At the same time I am aware that an ethical awakening in this direction has been the distinguishing feature of the activities of the public conscience during the past year.

For the future, as it seems to me, the prospect is hopeful. The people now want to know the truth about the railroads, and especially about the accident situation. The principle of keeping wheels moving regardless of right and wrong will not satisfy the American public indefinitely. On the railroads today, gentlemen, if you want to shave conditions, swell the pay roll, paralyze the management, and hoodwink the people, all you have to do is to threaten a tie-up. This is neither tradition nor prophecy, but the actual situation at the present day. It seems a pity, however, that it should now be necessary to wreck the railroads in order to get at the truth.

Just at present, then, these railroads need intelligent criticism, and in the matter of service they deserve the moral support of public opinion. The railroads today are being rent asunder by conflicting ideas and conflicting interests. From within and without these forces are working directly and potentially against the service. Under these circumstances there can be no solution of industrial or operating problems on American railroads, except through the medium of public opinion exerted along ethical lines.

Reformation on railroads should be constructive and helpful. Every unit of interest should get together on this platform. The actual necessities, financial and otherwise, of the railroads today should rally everybody connected with them to their support.

## DOUBLING THE LOAD CAPACITY OF AN OLD IRON RAILROAD VIADUCT.\*

In 1888 the Chicago & West Michigan built a wrought iron single track viaduct across the Manistee river about 100 miles north of Grand Rapids, Mich., at a point now known as High Bridge, on the Pere Marquette, which absorbed the old Chicago & West Michigan some years ago. This viaduct is 1,170 ft. long, including 14 tower spans 75 ft. high by 30 ft. long, supporting 45 ft. spans between towers, and one 150 ft. river span across the main channel of the stream. The 30 ft. and the 45 ft. spans were, in the original construction, deck plate girders spaced 8 ft. on centers. The river span consisted of 150 ft. deck trusses spaced 14 ft. on centers. The original structure was designed for a loading about equal to Cooper's E-25. The rolling stock gradually became heavier, so that in later years the bridge was somewhat overloaded. In 1911 it was desired to put E-50 loading on the bridge, which would be unsafe for the old structure. It remained to either replace the structure with a new one, or to reinforce it, and the latter method was elected as being much more economical.

J. F. Deimling, chief engineer of the Pere Marquette, in asking for competitive propositions for the reinforcement, submitted, by way of suggestion, a solution which had been used on the Mill Creek trestle. This consisted of adding a new line of

\*Abstracted from a paper by W. T. Curtis, contracting engineer, Wisconsin Bridge & Iron Co., presented before the Western Society of Engineers, Chicago, June 9, 1913.

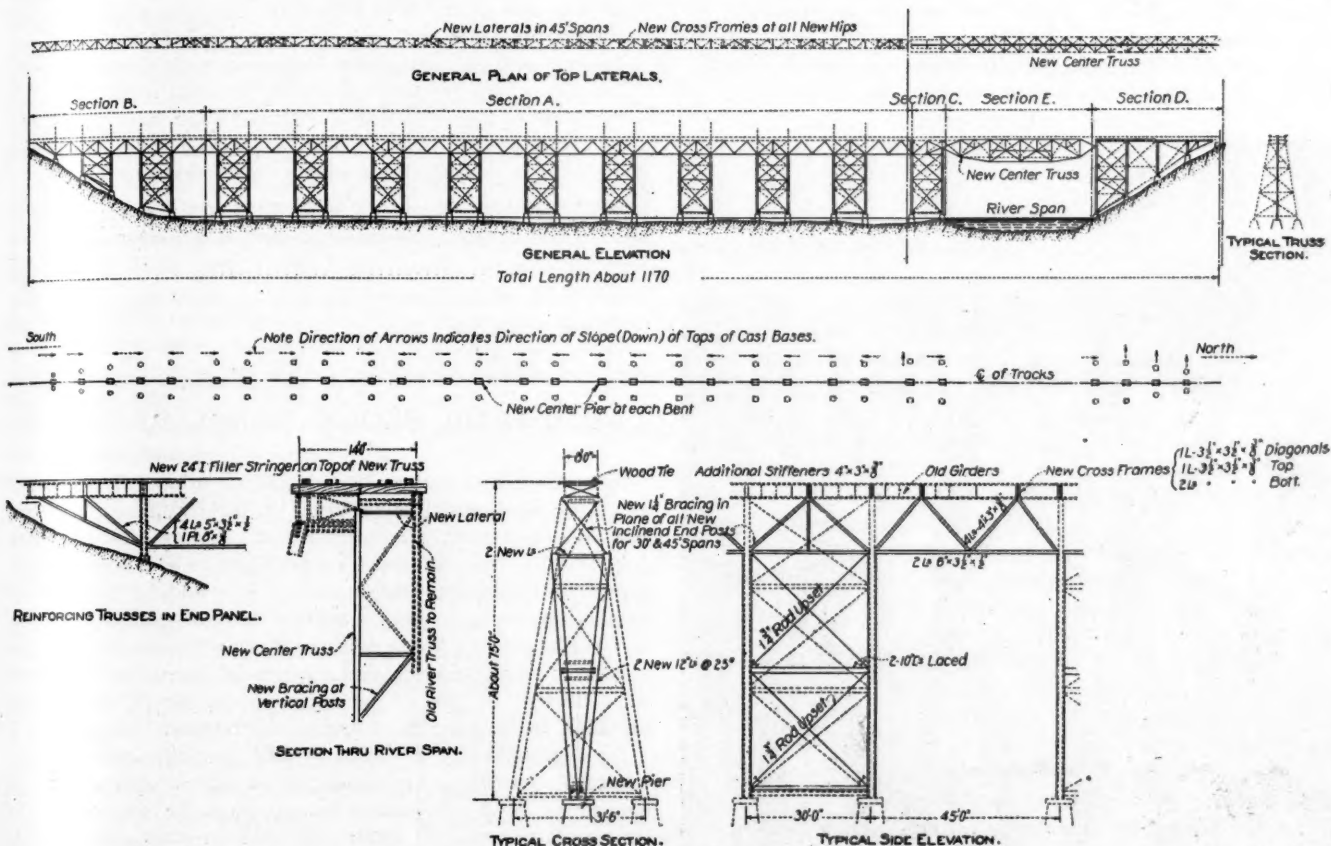


deck plate girders the entire length of the viaduct on the center line of track, these girders being supported on new independent posts at the center of each bent.

This scheme was discarded for the Manistee viaduct, partly on account of greater cost, but chiefly on account of uncertainty of distribution of load among the three girders, as the old girders are only 8 ft. centers, making the ties so short and stiff as to cause a marked degree of indeterminateness of the distribution of the load among the three girders. A further objection was the rocking or tipping effect over the new center girder as a fulcrum under imperfectly adjusted or worn ties, the shortness of the ties magnifying this difficulty. The girders of the old Mill Creek trestle were spaced further apart, which made the new middle girder idea less objectionable in that piece of work. A still further objection to this center girder scheme of rein-

bent consist of two A-frames. This construction has the desired effect of virtually lessening the height of the trestle towers by about 12 ft., for the load is now delivered into the towers at the bottom chord of the newly formed trusses. Furthermore, this system braces the structure longitudinally by virtue of the depth of the new trusses. Also, the new A-frame form of the bents stiffens the structure transversely. The scheme has the further advantage of being capable of field construction with practically no interference with traffic, as the old girders were not disturbed, except for the drilling of holes, etc., in them.

At the river span the system just described could, of course, not be followed, and here a new deck truss 150 ft. long was placed midway between the old trusses. The distance between the old trusses is 14 ft., being thus sufficiently far apart to give longer and consequently more limber ties, permitting of more definite



Elevation and Details of Reinforced Viaduct.

forcement was the fact that the erection would seriously interfere with traffic during a long period of time.

The scheme finally adopted was proposed by the Wisconsin Bridge & Iron Company, being original with the writer. The fundamental idea of the adopted scheme was to convert the old deck plate girders into deep lattice trusses, of which the old girders would themselves constitute the top chords. This was done by adding a bottom chord about 12 ft. below the girders and introducing a Warren web system between the two chords thus formed. These old deck girders are, of course, stiff enough to resist the bending action of the load, and to deliver these local loads to the panel points of the newly formed truss. In calculation, for safety, the old girders were figured both as single spans between new panel points, and as continuous girders, the worst result being used in all cases. Additional stiffeners were added and cross frames installed.

To carry the excess load from these newly formed trusses to the ground, two new columns are added to each bent, starting at the bottom chord of the new trusses and running on an incline down to a new concrete pier built at the center of each old bent. The two new columns thus form a V and make the remodeled

proportioning of loads as delivered from the ties into the two old and the one new truss, and also minimizing the tipping effect of the ties. The load from the new center river truss is carried to the ground by a new independent straight column.

The towers supporting the river span, and the three short spans of the north approach to the river span, were originally built with the deck girders spaced 14 ft. centers, the same as the river span trusses, and we therefore reinforced this small portion of the viaduct by the introduction of a new girder midway between the two old ones, in line with the new river truss and, like the latter, supported by a single new independent straight column at the middle of the old bents.

One source of indeterminateness in both of the schemes seriously considered was the possibility of improper distribution of load between the two old and the one new pier of each bent. This is always true in the case of a continuous three-point-bearing, but there was no alternative in this problem, as there seemed to be no way of getting sufficient bearing in the soil except to introduce the new middle pier. As a partial insurance to a proper distribution of loads on the three piers, the new middle pier was surmounted with an adjustable cast iron base, so simple

in its adjustment that a bridge inspector on his annual inspection can, without any assistance whatever, and with no other tools than a good sized wrench, adjust this shoe to take care of any difference in shrinkage or settlement which may appear among the three piers. The sliding surfaces of these adjustable shoes were coated with a cheap and lasting form of lubricant known as "Velvet No. 2." The wedges provide for a vertical movement of  $\frac{1}{8}$  in. for a horizontal movement of 3 in. and are controlled by ordinary machine bolts with double nuts. In erecting the wedges, they were set in pairs with the slopes in opposite directions so as to neutralize each other and prevent the entire structure from tending to drift or slide all in one direction.

The new piers were of concrete construction resting on piles, there being 12 piles to each of the standard bents, and 20 piles for the special piers under the new river truss. The piles were driven 35 ft. The piles were so arranged that they could be driven on either side of the old bent without disturbing the old iron work.

The method of handling the pile driver was quite interesting. It had to be moved many times to drive the small cluster of



Details of Reinforced Viaduct, Pere Marquette.

piles at each of the bents, each cluster being split into two groups as divided by the old iron bents which stood on the center line of each pile cluster. The pile driver was handled from the deck of the structure 75 ft. above, and was placed at the various points of operation without removing any of the old bracing. This not only saved expense, but was better for the structure. The driver was picked up near its center of gravity, tilted over with its legs uppermost and its nose or top thrust between the bracing rods of the structure to the desired point of setting up. In this way it was moved along from point to point. Very little timber bracing was used at the foot of the driver, which was guyed to the old iron columns of which there were plenty near each set-up. The engine was handled separately from the driver, not being mounted on it. This avoided the necessity of moving the engine as frequently as the driver.

The erection of the steel work was somewhat unusual, and while at first appearing somewhat formidable, it worked out satisfactorily and with reasonable economy, barring delays due to foundation trouble. The old work was mostly field bolted, which made the occasional temporary removing of old members less expensive. The new steel was handled by a derrick car at the beginning of the work, but this method did not prove entirely satisfactory, and was later replaced by a locomotive crane which gave better results.

The river span was erected with very little falsework. The new steel columns were first erected at the ends of this span. Then the top chord was raised and suspended from the old structure with steamboat ratchets, the turnbuckles being placed so as not to interfere with railroad traffic. All new top chord bracing was then placed, this being connected to the old trusses, and all bottom chord bracing removed. The balance of the new truss was then placed with falsework consisting of but a single wood post at either end, and the truss was kept suspended and controlled with 24 turnbuckles until completely riveted.

The cost of the reconstruction was, in round numbers, as follows; these figures including all extras on the work proper and a contractor's profit of 10 per cent., the work having been undertaken on a percentage basis with a fixed maximum limit:

Foundations in place (Ry. Co. furnished gravel free).....	\$10,200.00
New steel, 455 tons delivered at site (free freight).....	22,400.00
Erection of steel (free transportation of men and equipment)....	11,300.00

Total cost .....\$43,900.00

which, on a conservative guess, is only about half what a new structure would have cost.

The old structure weighed 496 tons.

## AUTOMATIC BLOCK SIGNAL RECORDS.

In our issue of February 21, page 333, we printed the records of automatic block signal performance on eight railroads, but omitting the names of the companies. All of them are prominent lines, doing a large business; but the names had to be omitted because certain collateral information, which it would be necessary to have if one were to make comparisons, one road with another, was not available. For a ninth road, however, we have a more complete record and the performance of signals on that road, the Baltimore & Ohio, is the subject of the sketch now printed, the facts being given by courtesy of President Daniel Willard.

On the Baltimore & Ohio we find carefully kept and well arranged records. The quality of its signal service is to be classed as good. It cannot be said that the performance of its signals is markedly better than that on other roads, but its recording system is well arranged, and the practice of its signal department is to a satisfactory degree typical of American practice. It is by no means certain that instructive comparisons, as between roads, can at present be made at all except in a very general way. The percentage of failures to perfect signal movements is found to vary so much between different roads similarly situated that it is evident that there are in most cases vital differences in the bases on which computations are made. And, as is obvious to the student of the subject, all mathematical comparisons are of secondary value, for the reason that on all of the principal roads the proportions of inefficiency are measured in hundredths or thousandths of 1 per cent., figures so small that the statistician, looking at percentages alone, would be forced to mark every record substantially "perfect." There are imperfections, but the specialist in percentages is not the one to help in curing them.

The Baltimore & Ohio System, with 5,471 miles of line, including the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton, of which 4,805 miles is passenger lines, has 431.82 miles, nearly all of which is double track or with more than two tracks, on which the automatic block system is used. The remainder of its passenger lines are operated under the manual block system. A great many of the automatic sig-



nals have been in service for a period of 12 years, and complete records of the performance of these signals have been kept since the first installation was made.

The sections of automatic signals in operation are indicated in the following table:

AUTOMATIC BLOCK SIGNALS—BALTIMORE & OHIO SYSTEM.		Miles.
New York division.....	Staten Island Lines.....	20.05
Philadelphia division.....	Philadelphia to Bay View.....	90.22
Baltimore division.....	Bay View to Waverly.....	4.20
	Baileys to Relay.....	6.50
	Relay to Washington.....	29.40
	Washington to Germantown.....	25.13
	Germantown to Washington Junction.....	17.15
	Washington Junction to Weverton.....	10.10
Cumberland division.....	Grafton to East Grafton.....	11.00
Monongah division.....	Grafton to East Grafton.....	2.50
Connellsville division.....	Connellsville to Pittsburgh.....	.73
Pittsburgh division.....	Goehring to West Pittsburgh.....	57.26
	West Pittsburgh to New Castle Junction.....	13.77
New Castle division.....	McCools to State Line.....	1.99
Chicago division.....	Hamler to Standley.....	22.40
B. & O. Chicago Terminal.....		10.70
		15.50
BALTIMORE & OHIO SOUTHWESTERN.		
Ohio division.....	Loveland to Oakley.....	14.10
Indiana division.....	Oakley to Cincinnati.....	10.81
CINCINNATI, HAMILTON & DAYTON.		
Toledo division.....		36.30
Indianapolis division.....		32.01
Total.....		431.82

The length of track included in the 431.82 miles above mentioned as equipped with automatic block signals is 839.78 miles, there being 67.11 single track, 343.08 double track, 4.80 three track, 16.83 four track. In addition to this there is on the B. & O. System 186.55 miles of road, or 355.17 miles of track in manual block territory, which is protected either by semi-automatic or automatic signals. This mileage is not included under automatic block signal mileage.

The number of signals of the different kinds may be seen from the following statement:

130	Hall Switch & Signal Company's disk type.
180	Hall Switch & Signal Company's electro-gas.
495	Union Switch & Signal Company's style "T."
20	Union Switch & Signal Company's electro-pneumatic top mast.
200	General Electric Company's electric motor.
100	General Railway Signal Company's model 2-A.

Of 1,125 automatic signals now in use on certain divisions, 749 are semaphores moving in the upper quadrant, 246 semaphores of the lower quadrant type and 130 are disk signals. All signaling in the future will be of the upper quadrant type, whether mechanically or electrically operated.

The number of cells of electric battery appears in the inventory as 40,213, which includes not only batteries for automatic block signals, but also a considerable proportion used at interlockings and for highway crossing bells. This total is made up of the following types:

Gravity cells, 6 in. x 8 in.....	27,170
Gordon "A".....	2,024
Edison "SS".....	1,622
Gordon Porcelain No. 3.....	947
Edison R. R.....	529
B S C O.....	2,027
Storage.....	5,337
Dry.....	557
Total.....	40,213

**Organization of Forces.**—The head of the operating organization is the general manager of the road. The signal engineer has charge of new signal work and of changes to be made in existing signal structures, and he passes on standards of design, construction and policy; but he is not in direct authority over the men who maintain the signals and keep them in operation—the supervisors and the maintainers and their assistants. The supervisor reports to the division engineer, who in turn reports to the superintendent. The supervisor has under him maintainers, assisted by battery men, and he assigns to each maintainer the care of from 15 to 25 miles of road. Maintainers take care of the interlocking as well as of the automatic signals, and the extent of their territory varies in proportion to the amount of interlocking to be cared for. The total number of maintainers on the Baltimore & Ohio, including the Baltimore & Ohio Southwestern and the Chicago Terminal Railroad, is

268. On the Philadelphia division there are 28 maintainers; on the Baltimore division, 37; Cumberland division, 32; on the three divisions centering in Pittsburgh, 82; and on other divisions smaller numbers.

As a means of keeping informed in detail of the work of the supervisors of the divisions and the maintainers, the signal engineer, at frequent intervals, sends out from his office inspectors who visit all divisions of the road and make observations on the work of the men and tests of apparatus, reporting the result of their investigations directly to the signal engineer.

**Records.**—The success of the maintainer in performing his task of keeping everything in perfect condition is measured by the freedom from unnecessary detentions of trains and from failures of the signals to properly display stop indications at the entrance of every block section at all times when that section is occupied by a train or car, or is unsafe for passage by reason of a broken rail or a misplaced or defective switch. The records of these failures, therefore, constitute a daily index of efficiency.

On receipt of a report of a signal not giving proper indication the dispatcher at once repeats the information to the maintainer for the district in which the signal is situated.

The maintainer explains failures and defects by making to his superior, the signal supervisor, a daily report. While explanations of causes of delays are its most prominent feature, this report also serves as a journal of all of the work done by the maintainer, much of which is connected with interlocking signals and has no direct connection with delays to trains. Moreover, this report affects the signal performance record, only to the extent that the maintenance of the apparatus in good order is an element in the safety of trains. It gives information concerning signal failures under the following eight heads: (1) name or character of appliance; (2) train delayed; (3) number of engine; (4) time of delay; (5) number of minutes delayed; (6) time notice received; (7) time maintainer reached the spot; (8) time consumed in repairs. This tabular statement is supplemented by a statement of the nature of the failure, the cause, so far as known, and a memorandum of the material used in making the repairs.

Three times a month the signal supervisor of each division makes a report to his superior, the division engineer in charge of roadway, summarizing the results of the work of the maintainers under his authority. This report shows all failures which have occurred on the division during the ten-day period covered by the report. The division engineer, after reading the report and taking any action thereon which may be required of him, sends it to the signal engineer, retaining a copy in his own office.

These reports, coming to the signal engineer's office from the different divisions of the road, form the basis for the classified record of signal failures, as shown on form 102, below.

For his own information, and for the purpose of making comparisons of the work or the ability of different supervisors, the signal engineer makes this classification for each division of the road and each subdivision; and also, in the case of large interlocking plants, for each plant individually. The sample statement shown below is a copy of the statement for the whole road for one year.

FORM 102.—AUTOMATIC SIGNAL FAILURES.  
REPORTED FAILURES, 1,598; ACTUAL FAILURES, 1,198.

		Per cent.
Nothing wrong.....	310	19.40
Short circuits, grounds and crosses.....	181	11.33
Lightning.....	165	10.33
Track wet and dirty.....	93	5.82
Broken wires.....	91	5.69
Mechanisms defective.....	81	5.07
Bond wires broken.....	76	4.76
Track changes.....	66	4.13
Obstructions dragging from cars or engines.....	61	3.82
Battery or gas exhausted.....	53	3.32
Relays defective.....	48	3.00
Pressure gages defective (electro-gas signals).....	44	2.75
Instruments out of adjustment.....	44	2.75
Train in block.....	40	2.50
Light out.....	37	2.31
Snow, ice and frost.....	24	1.50
Battery jar broken.....	22	1.38
Insulation worn out.....	15	.94
Corroded wires.....	15	.94
Dirt in mechanisms.....	15	.94
Defective battery material.....	13	.81

Repairmen cleaning instruments or renewing battery or wire.	13	.81
Broken rail*	13	.81
Switch left open*	13	.81
Maliciousness	11	.69
Loose connections	11	.69
Derailments*	10	.63
Car outside fouling point*	10	.63
Wires improperly connected.	6	.38
Derail left closed*	4	.25
Foreign current	3	.19
Residual magnetism	3	.19
Switch point open	3	.19
Careless operation	2	.12
Trunking and wires burnt.	1	.06
Loose wires caught mechanisms	1	.06
	1,598	100.00

\*Not chargeable to the signal department. "Obstructions dragging from cars or engines" might fairly have been deducted also.

In addition to the regular daily report, the signal maintainer makes a special report once a month showing the condition of the switch points at all of the interlockings in his territory. A switch point which is more than  $\frac{1}{4}$  in. out of its proper position and yet does not cause the automatic signal to show the stop indication is classed as dangerous. The signal engineer compares the percentages of efficiency of different districts, and in making this comparison of efficiency, a general test is made twice a year of the switches on the whole of the road.

**Results.**—It will be observed that in form 102 the first item, which includes 310 failures out of a total of 1,598, indicates that the alleged fault in the signal was not discovered. In other words, the maintainer, going to the signal and inspecting it as soon as possible after receiving the engineman's notice, found everything in good order. The signal department also disclaims responsibility for six other items in this list: train in block (40); broken rail (13); switch left open (13); derailments (10); car on side track outside the fouling point and obstruction the main line (10); derail left closed (4). These items, with the 310 first named, aggregate 400 cases which, deducted from the total, leaves 1,198; and 1,198 is the number recorded as the total of failures for the year referred to.

The efficiency of the signals in a given year as compared with another, or on a given division of the road as compared with another division, is calculated by finding the percentage of failures to the total number of signal movements. On the whole road, with an average of 667 signals in service in that year, there were 18,488,870 "perfect signal movements." The number of reported failures was 1,598, and of actual failures 1,198, as above noted. This makes one failure to 15,433 perfect movements. Adding the failures to the perfect movements, we have a total of 18,490,068 cases in which the signals operated or should have operated. The percentage of the perfect movements to this total is 99.99352. The signal department in its records claims an efficiency percentage, however, of only 99.97; the difference between this and the higher figure just given being due to the practice of assuming that a signal wrongfully indicating "stop" delays more than one train. Where the records do not show how many trains are thus delayed, the record is arbitrarily made to show five trains. In other words, the detentions, instead of being taken at 1,198, are assumed to be 5,547. The 19 "clear failures" recorded in the 12 months when compared with the total of 18,490,068 occasions when the signals operated or should have operated, works out a ratio of 1 in 973,161.

Cases in which a signal indicates clear falsely—shows "proceed" when the block section is occupied by a preceding train—are indicated in the failure report by the letter *W* (White). The record for the year in question includes 48 cases of this kind, five of which were failures of non-automatic signals, and 24 were due to the breaking of glasses at night, the larger portion of which were glasses on non-automatic signals. This leaves 19 false clear indications peculiar to automatic signals and directly chargeable to the automatic signal record. (As regards breakage of glass, there is a simple remedy, the use of colored glasses for all indications.)

The 19 dangerous failures of signal apparatus are recorded as being due to the following causes:

a, Residual magnetism	4
b, Loose screw, aluminum arm	1
c, Battery and relay wires crossed by track repairers	1
d, Relay contacts bent	1
e, Foreign current	2
f, Armature fused by lightning	1
g, Relay contact fused by lightning	1
h, Carbon relay contacts worn	1
i, Rusted shaft	3
j, Water in dash pot	1
k, Dry packing in dash pot	1
l, Retaining mechanism stuck	1
m, Retaining mechanism broken	1

When a false clear indication is reported, the matter is investigated to the fundamental cause. If the supervisor in charge of the division is unable to discover the cause or find any reason for the failure, he reports his conclusion to the signal engineer, who convenes a committee of signal supervisors on the ground for the purpose of making further investigation.

While the causes of these failures were thoroughly investigated and suitable remedies applied, the list as printed can be treated only as suggestive. Six of the cases, items *c*, *d*, *h*, *j*, *k*, *l*, were clearly due to faults of care or inspection. Items *b* and *i* also, very likely, represent failures which would not have occurred if the maintainers' vigilance had been perfect. The other items, *a*, *e*, *f*, *g*, *m*, represent causes which are difficult to guard against without exception. Residual magnetism may be due to the use in relays of iron not properly annealed. In track relays the separating of the contacts is produced by weakening the current, not by cutting it off absolutely; and the difference between the pick-up and the drop-away voltage is small. If a relay gets out of adjustment to such a degree that this difference is too small for safety the trouble very likely is due to the tests of the relay not being made frequently enough.

Foreign currents come mostly from the power lines of electric railways near the railroad. The source being known, trouble from the interfering current is guarded against by introducing duplicate relays or by using alternating current, of distinctive frequency, in the track circuits. Sometimes, however, disturbances occur from some new source which is not easily discovered.

Lightning, with its unknown and immeasurable voltage, is a danger element which, though now well understood, as compared with the meagre knowledge of ten years ago, still baffles the most determined attempts of the signal engineer to make his apparatus wholly immune to its destructive influence. The use of different types of lightning arresters, the shortening of line circuits and other expedients are resorted to, but a comprehensive safeguard, applicable everywhere, under well understood conditions, is yet to be discovered. Fortunately, the more serious atmospheric disturbances of electrical apparatus are in most cases announced by thunder and lightning and the signal maintainer is thereby put on his guard.

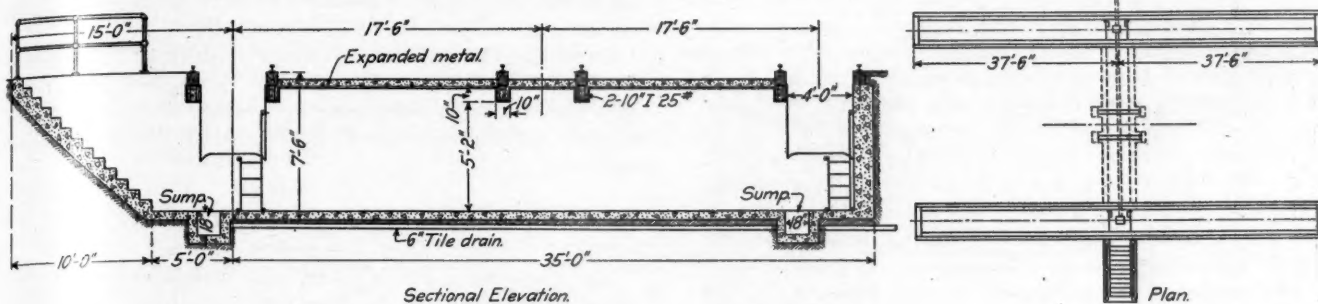
**TRANSANDINE RAILWAY DIFFICULTIES.**—A further suspension of traffic on the Transandine Railway, Chile, is imminent. It is usually at this period that the snows commence to fall in the upper regions of the Andes, but this year the visitation is a somewhat earlier one than usual. Notwithstanding the utmost precautions taken by the authorities, these interruptions to traffic must continue to take place for many years to come, until, in fact, there has been provided—and that would prove a very costly undertaking—a continuous line of snow-sheds. Even then the dangers of interruption to the traffic would not be at an end, for there always remain the drifts and slides which are bound to interfere with the working of the system. It is doubtful whether the passage of the Andes will ever become as simple a matter as the journey to and from the mountains. Improvements, however, already have been introduced since the occurrences of the past year, and it will be instructive to note to what extent they will succeed in overcoming the delays that ensued in 1912, when traffic was seriously interrupted.



## NEW YARDS OF THE CHICAGO & ALTON NEAR CHICAGO.

The Chicago & Alton has recently authorized the construction of a new yard along its main line at Glenn, Ill., about ten miles southwest of Chicago and about two miles west of the city limits. This yard is the development of plans inaugurated two years ago when tracks holding about 1,000 cars were built, although the detailed design of the yard has been materially changed since that time. The work now under way involves

Eleven of these tracks are already in. This yard will connect directly with the northbound main line at the north end, while access is had to both main lines from the ladder at the south end. The south yard for receiving and making up main line trains will consist of 18 tracks, exclusive of a running track on each side, with a total capacity of 2,045 cars. Thus, the tracks in the south yard have an average capacity of 114 cars—sufficient to accommodate the longest main line train, while the tracks in the north yard are designed for only about half this length because of the inability of some of the other roads to receive trains



Plan and Section of Inspection Pit.

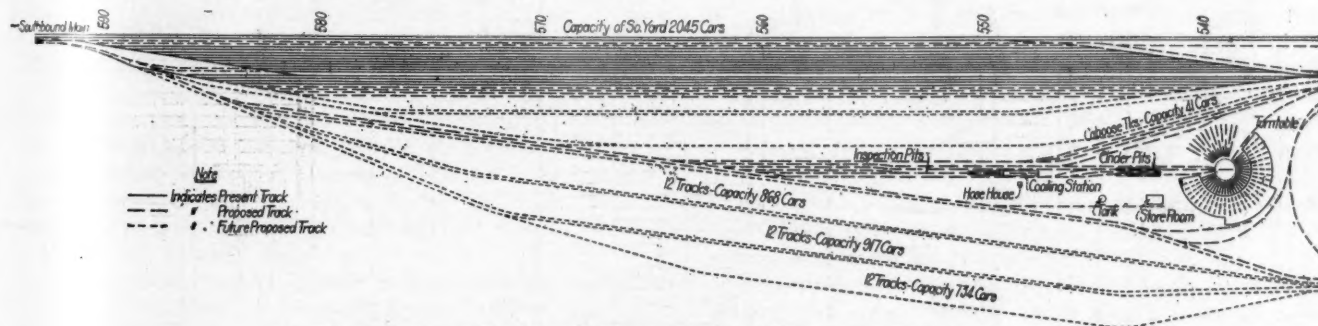
the completion of these yards to a capacity of 3,700 cars and the construction of an engine terminal including roundhouse, cinder pits, coaling station and auxiliary facilities. Provisions are made in this plan for further additions as required, which will materially increase this capacity.

This yard is intended to relieve the Brighton Park yard, five miles nearer the city, of the classification of main line and interchange business and to permit it to be used for local distribution of freight within the city. The plan also contemplates the construction of two additional tracks between Glenn and Brighton Park yards for slow freight and switch engine movements, and the construction of two tracks for a distance of approximately

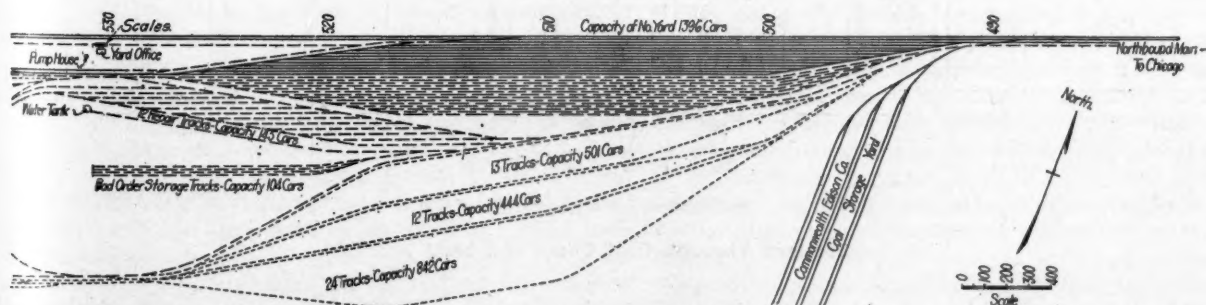
of greater length than 50 cars in their interchange yards. This south yard is also connected with both main lines by crossovers at the south end of the yard. As shown on the accompanying map, all but six of these tracks are now in.

About 350,000 cu. yd. of filling is required for the tracks now being constructed; the average height of fill being about 3 ft. Owing to the swampy character of the ground, this fill is being made with cinders rather than with sand.

One unusual feature in the design of this yard is the wye and loop for turning engines or entire trains, located in the center of the yard just north of the roundhouse. This loop is directly accessible from either end of the yard, or from the main line.



Track Plan of the New Chicago & Alton Yards near Chicago.



Track Plan (Continued).

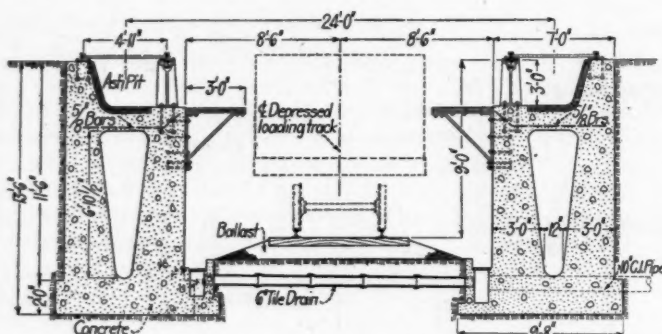
two miles at the south end of Glenn yard for the easy and convenient movements in and out of this yard of trains. The Glenn yard will be a flat yard, divided into two main portions. The north yard will be devoted largely to interchange business with other roads and will consist of 24 tracks with a capacity of 1,396 cars, in addition to a running track on each side.

The maximum curve is 14 deg. Inside this loop are located 12 repair tracks with a total capacity of 143 cars and four bad order storage tracks holding 104 cars. The tracks are spaced 13 ft. centers in the classification yards with 23 ft. in the repair yard.

The main structure in the engine terminal is a 30 stall brick

roundhouse with 100 ft. stalls, 75 ft. engine pits, and a 90 ft. turntable. This roundhouse is located in the center of the yard with entrance from either direction. Ten radial tracks are provided for engine storage opposite the house. This roundhouse is of standard construction with brick floors, hot air heat, boiler washing system, etc. A small annex around the center of the house will contain the boiler rooms, powerhouse, fan house and a small shop for light repairs to locomotives.

A double cinder pit with a depressed track in the center is



Section Through Ash Pits and Loading Track.

located just outside of the roundhouse. This pit will be 200 ft. long, enabling six engines to clinker at one time. The engine tracks will be supported on heavy concrete walls, hollowed out in the center, as shown in the drawing, and filled with sand, to save concrete; the amount of concrete in each wall being reduced by about 100 yd. in this manner. The loading track will be depressed 9 ft. below the engine tracks, and platforms 3 ft. wide will be built out on each side at the elevation of the bottom of the cinder pits, on which workmen may stand while loading the

dry sand bin with a capacity of 66 tons. The wet sand bins extend down considerably below the level of the coal chute bin floors to a dryer, provided in the bottom of each bin. The dry sand is elevated by compressed air into the dry sand storage.

Two engine inspection pits each 75 ft. long are located just west of the coal chute. A concrete stairway at the center of the east pit leads down to a tunnel reaching both inspection pits, passing under an intermediate track to connect with the pit on the west. Access to the inspection pits is secured by short ladders leading from the tunnels. It is expected to do much of the routine inspection of locomotives on these pits, relieving the tracks in the roundhouse to this extent.

The construction of these buildings has been let to the George B. Swift Co., Chicago, while all other work, including grading and track laying, is being done by company forces. This work is being handled under the direction of H. T. Douglas, Jr., chief engineer.

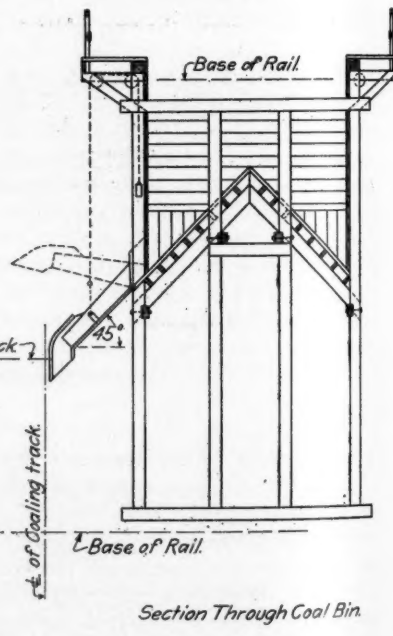
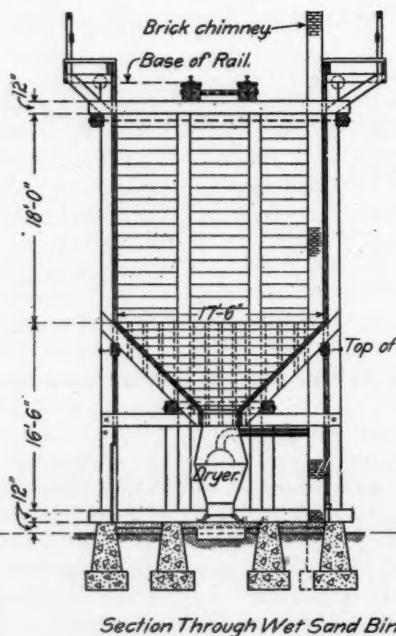
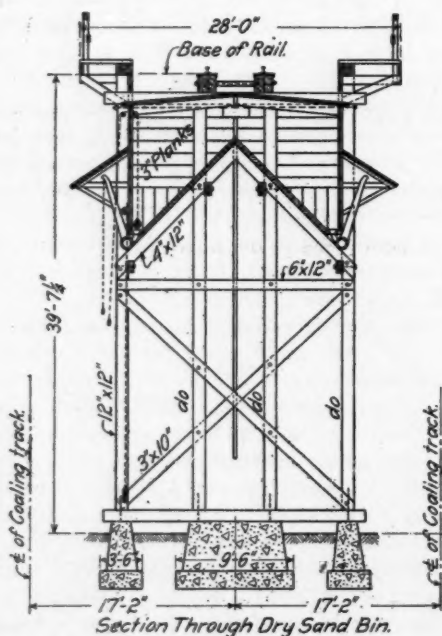
### THE PROPOSED ARBITRATION BILL.

The following is the full text, with certain exceptions noted below, of the bill which has been introduced into Congress, providing for mediation, conciliation and arbitration in controversies between certain employers and their employees.

Section 1. That the provisions of this act shall apply to any common carrier or carriers, etc. [same provisions as the Erdman act].

A common carrier subject to the provisions of this act is hereinafter referred to as an "employer," and the employees of one or more such carriers are hereinafter referred to as "employees."

Sec. 2. That whenever a controversy concerning wages, hours of labor, or conditions of employment shall arise between an employer or employers and employees subject to this act,



Sections Through Coal Chute and Sand Bin.

cinders. These platforms will be covered with steel plates nicked with cold chisels to insure safe footing.

The coal chute will be of timber construction throughout with a track reaching the upper deck by means of a framed approach trestle on a 20 per cent. grade. Five double bins with a total capacity of 300 tons will be built. Immediately adjoining this on the north end and built as a part of the coal chute with the track above, will be the sand storage consisting of three bins with a capacity of 374 tons of wet sand each, and one double

interrupting or threatening to interrupt the business of said employer or employers to the serious detriment of the public interest, either party to such controversy may apply to the Board of Mediation and Conciliation created by this act and invoke its services for the purpose of bringing about an amicable adjustment of the controversy; and upon the request of either party the said board shall with all practicable expedition put itself in communication with the parties to such controversy and shall use its best efforts, by mediation and conciliation, to bring



them to an agreement; and if such efforts to bring about an amicable adjustment through mediation and conciliation shall be unsuccessful, the said board shall at once endeavor to induce the parties to submit their controversy to arbitration in accordance with the provisions of this act.

In any case in which an interruption of traffic is imminent and fraught with serious detriment to the public interest, the Board of Mediation and Conciliation may, if in its judgment such action seem desirable, proffer its services to the respective parties to the controversy.

In any case in which a controversy arises over the meaning or the application of any agreement reached through mediation under the provisions of this act, either party to the said agreement may apply to the Board of Mediation and Conciliation for an expression of opinion from such board as to the meaning or application of such agreement and the said board shall upon receipt of such request give its opinion as soon as may be practicable.

Sec. 3. That whenever a controversy shall arise between an employer or employers and employees subject to this act, which cannot be settled through mediation and conciliation in the manner provided in the preceding section, such controversy may be submitted to the arbitration of a board of six, or, if the parties to the controversy prefer so to stipulate, to a board of three persons, which board shall be chosen in the following manner: In the case of a board of three, the employer, or employers, and the employees, parties respectively to the agreement to arbitrate, shall each name one arbitrator; and the two arbitrators thus chosen shall select the third arbitrator; but in the event of their failure to name the third arbitrator within five days after their first meeting, such third arbitrator shall be named by the Board of Mediation and Conciliation. In the case of a board of six, the employer, or employers, and the employees, parties respectively to the agreement to arbitrate, shall each name two arbitrators, and the four arbitrators thus chosen shall, by a majority vote, select the remaining two arbitrators; but in the event of their failure to name the two arbitrators within fifteen days after their first meeting the said two arbitrators, or as many of them as have not been named, shall be named by the Board of Mediation and Conciliation.

In the event that the employees engaged in any given controversy are not members of a labor organization, such employees may select a committee which shall have the right to name the arbitrator, or the arbitrators, who are to be named by the employees as provided above in this section.

Sec. 4. That the agreement to arbitrate:

First. Shall be in writing.

Second. Shall stipulate that the arbitration is had under the provisions of this act.

Third. Shall state whether the Board of Arbitration is to consist of three or six members.

Fourth. Shall be signed by duly accredited representatives of the employer or employers and of the employees.

Fifth. Shall state specifically the questions to be submitted to the said board for decision.

Sixth. Shall stipulate that a majority of said board shall be competent to make a valid and binding award.

Seventh. Shall fix a period from the date of the appointment of the arbitrator or arbitrators necessary to complete the board, as provided for in the agreement, within which the said board shall commence its hearings.

Eighth. Shall fix a period from the beginning of the hearings within which the said board shall make and file its award; provided that this period shall be thirty days unless a different period be agreed to.

Ninth. Shall provide for the date from which the award shall become effective and shall fix the period during which the said award shall continue in force.

Tenth. Shall provide that the respective parties to the award will each faithfully execute the same.

Eleventh. [Award binding as in Erdman act.]

Twelfth. May also provide that any difference arising as to the meaning or the application of the provisions of an award made by a board of arbitration shall be referred back to the same board or to a sub-committee of such board for a ruling, which ruling shall have the same force and effect as the original award; and if any member of the original board is unable or unwilling to serve, another arbitrator shall be named in the same manner as such original member was named.

Sec. 5. That for the purpose of this act the arbitrators herein provided for, or either of them, shall have power to administer oaths, etc. [as in Erdman act] and affirmations, sign subpoenas, require the attendance and testimony of witnesses, and the production of such books, papers, contracts, agreements and documents material to a just determination of the matters under investigation as may be ordered by the court; and may invoke the aid of the United States courts to compel witnesses to attend and testify to produce such books, papers, contracts, agreements and documents to the same extent and under same conditions and penalties as is provided for in the act to regulate commerce, approved February 4, 1887, and the amendments thereto.

Sec. 6. That every agreement of arbitration under this act shall be acknowledged by the parties thereto before a notary public or a clerk of the district or the circuit court of appeals of the United States, or before a member of the Board of Mediation and Conciliation, the members of which are hereby authorized to take such acknowledgments; and when so acknowledged shall be delivered to a member of said board or transmitted to said board to be filed in its office.

When such agreement of arbitration has been filed with the said board, or one of its members, and when the said board, or a member thereof, has been furnished the names of the arbitrators chosen by the respective parties to the controversy, the board, or a member thereof, shall cause a notice in writing to be served upon the said arbitrators, notifying them of their appointment, requesting them to meet promptly to name the remaining arbitrator or arbitrators necessary to complete the board, and advising them of the period within which, as provided in the agreement of arbitration, they are empowered to name such arbitrator or arbitrators.

When the arbitrators selected by the respective parties have agreed upon the remaining arbitrator or arbitrators, they shall notify the Board of Mediation and Conciliation; and in the event of their failure to agree upon any or upon all of the necessary arbitrators within the period fixed by this act, they shall, at the expiration of such period, notify the Board of Mediation and Conciliation of the arbitrators selected, if any, or of their failure to make or to complete such selection.

If the parties to an arbitration desire the reconvening of a board to pass upon any controversy arising over the meaning or application of an award, they shall jointly so notify the Board of Mediation and Conciliation, and shall state in such written notice the question or questions to be submitted to such reconvened board. The Board of Mediation and Conciliation shall thereupon promptly communicate with the members of the Board of Arbitration or a sub-committee of such board appointed for such purpose pursuant to the provisions of the agreement of arbitration, and arrange for the reconvening of said board, or sub-committee, and shall notify the respective parties to the controversy of the time and place at which the board will meet for hearings upon the matters in controversy to be submitted to it.

Sec. 7. That the Board of Arbitration shall organize and select its own chairman and make all necessary rules for conducting its hearings; but in its award, or awards, the said board shall confine itself to findings or recommendations as to the questions specifically submitted to it, or matters directly bearing thereon. All testimony before said board shall be given under oath or affirmation, and any member of the Board of Arbitration shall have the power to administer oaths or affirmations. It may employ such assistants as may be necessary in carrying on its work. It shall whenever practicable be supplied with suitable

quarters in any Federal building located at its place of meeting, or at any place where the Board may adjourn for its deliberations. The Board of Arbitration shall furnish a copy of its award to the respective parties to the controversy, and shall transmit the original, together with the papers and proceedings and a transcript of the testimony taken at the hearings, certified under the hands of the arbitrators, to the Board of Mediation and Conciliation to be filed in its office. The clerk of any court of the United States in which awards or other papers or documents have been filed by Boards of Arbitration in accordance with the provisions of the act approved June 1, 1898, providing for mediation and arbitration, is hereby authorized to turn over to the Board of Mediation and Conciliation, upon its request, such awards, documents and papers. The United States Commerce Court, the Interstate Commerce Commission and the Bureau of Labor are hereby authorized to turn over to the Board of Mediation and Conciliation, upon its request, any papers and documents heretofore filed with them, and bearing upon mediation or arbitration proceedings held under the provisions of said act.

Sec. 8. That the award being filed in the clerk's office of a district court of the United States, as hereinbefore provided, shall go into practical operation, and judgment shall be entered thereon accordingly at the expiration of ten days from such filing, unless within such ten days either party shall file exceptions thereto for matter of law, etc. [same as Erdman act].

Sec. 9. [Provisions in regard to receivers same as Erdman act.]

Sec. 10. That each member of the Board of Arbitration created under the provision of this act shall receive such compensation as may be fixed by the Board of Mediation and Conciliation, together with his traveling and other necessary expenses. The sum of \$25,000, or so much thereof as may be necessary is hereby appropriated, to be immediately available and to continue available until the close of the fiscal year ending June 30, 1914, for the necessary and proper expenses incurred in connection with any arbitration or with the carrying on of the work of mediation and conciliation, including per diem, traveling, and other necessary expenses of members or employees of Boards of Arbitration and rent in the District of Columbia, furniture, office fixtures and supplies, books, salaries, traveling expenses, and other necessary expenses of members or employees of the Board of Mediation and Conciliation, to be approved by the chairman of said Board and audited by the proper accounting officers of the treasury.

Sec. 11. There shall be a Commissioner of Mediation and Conciliation, who shall be appointed by the President, by and with the advice and consent of the Senate, and whose salary shall be \$7,500 per annum, who shall hold his office for a term of seven years; and until a successor qualifies, and who shall be removable by the President only for misconduct in office. The President shall also designate not more than two other officials of the government who have been appointed by and with the advice and consent of the Senate, and the officials thus designated, together with the Commissioner of Mediation and Conciliation, shall constitute a board to be known as the United States Board of Mediation and Conciliation.

There shall also be an Assistant Commissioner of Mediation and Conciliation, who shall be appointed by the President, by and with the advice and consent of the Senate, and whose salary shall be \$5,000 per annum. In the absence of the Commissioner of Mediation and Conciliation, or when that office shall become vacant, the Assistant Commissioner shall exercise the functions and perform the duties of that office. Under the direction of the Commissioner of Mediation and Conciliation, the assistant commissioner shall assist in the work of mediation and conciliation and when acting alone in any case he shall have the right to take acknowledgments, receive agreements of arbitration, and cause the notices in writing to be served upon the arbitrators chosen by the respective parties to the controversy, as provided for in Section 5 of this act.

## General News.

Alexander H. Stephens, hitherto district superintendent at San Francisco, has been appointed general superintendent of the railway mail service, in place of Theodore Ingalls.

W. G. Lee, chief of the Brotherhood of Railroad Trainmen, has been re-elected for the ensuing term by a vote of 446 against 394 for A. F. Whitney, who is third vice-president of the brotherhood.

The New York Central has readjusted the pay of telegraphers and signalmen granting increases, dating from May 15, to about seventy per cent. of the men in these departments. The average increase is about 6 per cent.

The Old Time Telegraphers' & Historical Association will hold its 32nd annual meeting at Hotel Cadillac, Detroit, Mich., August 26, 27 and 28. The secretary of the association is F. J. Scherrer, 30 Church street, New York City.

In the Federal Court at Columbus, Ohio, June 5, the grand jury returned 20 indictments against the Grand Trunk Western Railroad, charging illegal reductions in rates for the transportation of coal between Newark, Ohio, and Battle Creek, Mich.

The United States Steel Corporation, in its monthly statement issued this week, reports unfilled orders on its books on May 31 of 6,324,322 tons. This compares with 6,978,762 tons on April 30, a decrease of 654,440 tons, and with 7,468,956 tons on March 31, 7,656,714 tons on February 28 and 5,750,983 May 31, 1912.

The shipments of anthracite coal from the Pennsylvania mines in the month of May amounted to 5,995,742 tons. The Lehigh Valley carried 1,191,632 tons, and the Philadelphia & Reading 1,123,869 tons. The total shipments were about 320,000 tons less than in the same month of 1911. In May, 1912, the movement was very small, operations at the mines having been suspended to a large extent in that month.

The governor of Massachusetts has vetoed the bill passed by the legislature, permitting the New York, New Haven & Hartford to acquire all the electric railways in the state west of Worcester. The governor says that while the bill "purports to provide better transportation facilities for western Massachusetts, in fact it has been skilfully drafted in such manner as to legalize unlawful acts hitherto committed by the railroad companies [the New Haven] without giving any satisfactory assurance that the transportation facilities needed in Western Massachusetts will ever be provided."

A press despatch from Seward, Alaska, says that the rolling stock and rights of the Alaska Northern railway have been turned over to a committee of business men to be operated for the benefit of the community. This action was taken by Chief Engineer Swanitz, because of a demand by the United States for payment of \$67,000 mileage tax. The railroad company says Congress expressly relieved the company from paying this tax until 1916. Contributions were made by Seward business men to hire crews and run trains to carry supplies to miners and settlers in the interior. No fixed charge for this service is made, but the committee will accept gifts of money. The Alaska Northern extends from Seward north to Kern Creek, 71 miles.

In his appreciation of safety at grade crossings, Governor Sulzer, of New York, evidently holds the same restricted views as were manifested by two of his predecessors. He has vetoed the appropriation called for by the Public Service Commission for the first district for separation of grades. In this district lie many miles of the Long Island Railroad, in crying need of this improvement. The commission will ask the forthcoming special session of the legislature for an appropriation, especially to enable it to proceed with the work of eliminating crossings on the lines of the Long Island road in Queens Borough. The commission asked the last session of the legislature for \$1,500,000. The appropriation bill carried only \$350,000, but even this was vetoed by the governor. Since 1911 no money has been appropriated, and as a result elimination work in this district, except as to that ordered prior to that time, is at a stand-still. The commission has held hearings on several groups of crossings which it desires to eliminate and only awaits an appropriation by the state to issue the necessary orders. Among these crossings are 21 on the Atlantic avenue division between the end of the ele-



vated structure and the beginning of the Jamaica improvement. The elimination of these crossings will cost about \$3,500,000, and the railroad company is willing to supply its half of the cost as soon as the state makes an appropriation.

#### Ninety-three Miles an Hour, All Day.

A French aviator, Marcel G. Brindejono des Moulinais, on Tuesday last flew from Paris to Warsaw, via Berlin, a distance of 1,500 kilometers (932 miles), in thirteen hours, and, excluding stops, attained an average speed of 93 miles an hour. He accomplished this in the competition for the Pommery cup, for the longest flight across country from sunrise to sunset in one day. The aviator landed at Wanne, in Prussia, at 8 a. m., and at Berlin at noon.

#### A Railroad Number of Leslie's Weekly.

The issue of *Leslie's Illustrated Weekly* for June 5, 1913, may be called a railroad number. The colored picture, entitled "Empire Builders," filling the front page, puts a considerable tax on the railroad man's imagination, in the matter of details, but is possessed of spirit nevertheless. There is a full-page portrait of the late Henry M. Flagler, a page of portraits of railroad officers, and another page of portraits of members of the Railway Business Association. The portraits of railroad officers are quite familiar to the general reader, but those of the supply men are less familiar. They are: S. P. Bush, president of the Buckeye Steel Castings Company; John F. Dickson, president, Dickson Car Wheel Company; T. A. Griffin, president, Griffin Wheel Company; A. B. Johnson, president, Baldwin Locomotive Works; E. B. Leigh, president, Chicago Railway Equipment Company; William Lodge, president, Lodge & Shipley Machine Tool Company; A. H. Mulliken, president, Pettibone-Mulliken Company; E. H. Outerbridge, the Millboard Company; George A. Post, president, Railway Business Association; W. W. Salmon, president, General Railway Signal Company; George T. Smith, president, Joseph Dixon Crucible Company; John F. Wallace, president, Westinghouse, Church, Kerr & Co., and George Westinghouse. These portraits are accompanied by a brief article by Mr. Post, and the portraits and sketches of the railroad officers are accompanied by articles by B. F. Bush, president of the Missouri Pacific, and F. A. Delano, president of the Wabash. There is an article on railroad building in western Canada by J. O. Curwood, one on safety by Homer Croy, and one by E. C. Simmons, chairman of the Simmons Hardware Company, St. Louis, favoring the proposition to allow the railroads to make a small advance in freight rates. Mr. Simmons says that his house ships more goods and pays more freight than any other mercantile house in the United States. The concern has seven houses, and 500 traveling men; and the sentiment and temper of the people is recorded in the head office at least every week. He estimates that his traveling men talk with an average of 5,000 voters every day in the year. He says that the change in public sentiment from its former enmity to railroad interests has been going on four or five years, and that the public mind is still changing very rapidly.

#### Apropos of Railroad Presidents.

"Be very careful in your investigations of every case presented to you," said a New York judge in impaneling a grand jury recently. "Many a hard-earned reputation has been destroyed by the filing of unnecessary indictments, and the dismissal of the indictment does not remove the stigma upon a person's name." That is good advice for any grand jury anywhere. There is always danger of the thought that "this isn't a trial; it isn't calling him guilty; he'll have his chance later on; we'll indict him on general principles." But it is hard for anyone to undo the damage caused by an unjustified indictment.—*Boston Post*.

#### Frisco Service Good, and Growing Better.

Thomas H. West and B. L. Winchell, receivers of the St. Louis & San Francisco, have addressed the following circular to the employees:

"It is particularly desirable that every employee upon the Frisco payroll shall impress every patron of the line and the public at large with the fact that the Frisco is a going institution and that it will not stop going.

"The appointment of receivers of the property in no wise affects the day-to-day operations; the Frisco has been endeavoring to give all patrons good service; the same operating and traffic forces throughout will continue to serve the public just as carefully and just as well as in the past; it is even hoped by the receivers that the physical property and the character of the service shall be bettered from time to time.

"The same earnest solicitation by the traffic representatives and the same painstaking care of the business after it has been secured will hold all of our old patrons and bring us others."

#### Canadian Railway Subsidies.

Details of the subsidies proposed at the present session of parliament by the Canadian Government were given out last week. The Canadian Northern gets \$12,000 per mile on 910 miles from Ottawa to Port Arthur, on 260 miles from Edmonton to the British Columbia boundary, and \$6,400 per mile for the line from Toronto to Ottawa, 250 miles. The subsidies are to be paid by instalments upon completion of each ten-mile section. The aggregate of the Canadian Northern subsidies at \$12,000 a mile is \$15,640,000, and of the other on the lower basis, \$1,600,000, a total of \$17,240,000. A condition is the transfer to the government of \$7,000,000 of fully paid-up shares of common stock of the company. The Ontario government is subsidized at \$6,400 on the following lines of the Temiskaming & Northern Ontario: North Bay to Cochrane, 258 miles; Englehart to Charlton, 7.8 miles; Cobalt to Kerr Lake, 3.9 miles; Iroquois to Timmins, 33.2 miles; Earlton to Elk Lake, 28.5 miles; Iroquois Falls Station to Iroquois Falls, 7.25 miles; a total of about \$2,135,000. Other subsidies at \$3,200 per mile are to the Margaree Coal and Railway Company, Orangedale to St. Rose, 46 miles; McIntyre to Caribou, 4 miles; Northern New Brunswick Railway, Drummond and Austin Brook, 16 miles; Tobique and Campbellton Railway, 25 miles; St. John and Quebec Railway, Andover to St. John, 200 miles; Lotbiniere and Megantic Railway, 60 miles; Megantic to International boundary, 35 miles; Little Nation Railway, Thurso to Montebello, 30 miles; Erie, London and Tilsonbury Railway, 35 miles; St. Mary's to Embro, 10 miles; Alberta Central Railway, 70 miles; Kettle Valley Railway, 335 miles; Calgary & Fernie Railway, 100 miles; for bridge over Burrard Inlet, Vancouver, B. C., \$350,000; Canadian Pacific Railway, Gimli to Icelandic River, 30 miles. The subsidies are governed by the usual conditions.

#### Electric Switchers at Harlem River.

The use of electric locomotives in the freight yard of the New York, New Haven & Hartford at its Harlem River terminus in the Borough of the Bronx, New York City, has increased the value of real estate in that vicinity. This we have on the authority of an officer of the road. The discontinuance of the use of steam locomotives for switching has so abated the nuisances of noise and smoke that dwelling houses have been put up, near the freight yards, on land which formerly could not be disposed of for dwelling-house purposes. Steam switching engines have been abandoned also at New Rochelle, Mount Vernon, Woodlawn and Stamford. Within a few months electric locomotives will be used for all purposes on this road between New Haven and New York, which will result in a widespread abatement of the noise nuisance. The Harlem River yard occupies about 275 acres and has 86 miles of track. There are not yet enough electric locomotives in service to do all of the work in this yard in the busiest hours, but the number will soon be increased.

Describing the overhead electric structures in the yard the literary artist of the road says:

Standing on one of the highway bridges which span the yard it looks for all the world as if some gigantic spider had spun his web as a covering for the tracks beneath. This spidery-like structure stretching in all directions as far as the eye can see is whence the smokeless freight yard gets its motive power.

Here and there under the wires as you look down through the meshes of this web below you cars are moving singly and in trains. Not a sound comes to indicate whose hand is doing all this. There isn't a cloud of black smoke rising and spreading out over the yard as is usually the case, to show where the switch engine labors at its task. These cars, loaded with the commerce of the country, are being shunted by some invisible

hand. The only noise from the yards comes from the occasional squeak of a wheel or the coupling of the cars.

But if you watch this scene closely enough you will finally discern through the maze of wires and amid the roofs of the myriad freight cars a queer looking object, a cheese box on wheels, gliding noiselessly about—the electric switch locomotive—"mother hubbards" they call them. It goes about its task without showing any of those signs of distress so common in the steam switch engine, no exhausted breathing, no puffing and panting, no cloud of smoke ascending in the air to mark its location. It seems the embodiment of power and efficiency. The total car movement in this yard averages 5,000 cars a day. In place of the triangle of wires seen on the main line, each track in the freight yard has a single  $\frac{3}{4}$ -in. cable supported from the cable strung between the towers. From this cable is suspended a conductor wire of copper and below this is the contact wire of steel against which the pantagraph runs. At the switches steel deflectors are used to keep the pantagraph running smoothly.

Except at points where they go under the highway bridges the contact wire is  $22\frac{1}{2}$  ft. above the top of the rail. This gives about a 2-ft. clearance for the brakeman riding on top of the cars. Out of 500 men constantly at work in the yard not one has been hurt since the electrical operation began. In the Westchester auxiliary yard two electric switch engines are doing the work for which three steam engines were formerly used.

But the saving to the railroad is as nothing compared to the immense civic benefit it has conferred on those communities which were once bothered with smoke and noise, as has been noted above.

#### The First Step.

Senator La Follette now gives notice that he isn't going to be satisfied with getting the property of the railroads revalued. That's only the first step. Congress must absolutely divorce the transportation business from all other kinds of business. It must put an end to the interlocked directorates. And, thirdly, it must create yet another new federal bureau at Washington, "for ascertaining and standardizing the cost of every element of railroad maintenance and railroad operation."—*Hartford Courant*.

#### The Safety Propaganda on the Pennsylvania.

General Manager S. C. Long has issued to the Safety Committees of the Pennsylvania Railroad a pamphlet entitled "Hints and suggestions on the prevention of personal injury accidents," which is more comprehensive than anything of the kind which we have seen. At the same time it does not go into detail, and on many points there is no attempt to be specific. The book is for committees and not primarily for the individual employee, and in matters concerning which there is room to pursue two or more courses, the book sets forth general principles only. But, though it does not answer all questions, the pamphlet is to be put into the hands of employees generally. The matter is divided into two general parts—(1) Road and yard conditions, and (2) Shop conditions. Under each of these the subjects are arranged alphabetically. For example, under the head of "right of way" we have bridges, coal wharves, culverts, ditches, etc. Under "operation" the titles are baggage trucks, blue flags, book of rules, bumping blocks, coupling cars, etc. Under the head of "shop conditions" we have 41 titles; air hoists, belt and pulley guards, belt shifters, belting, boring mills, chains, etc.; and in addition there are 14 items under the head of "special safety precautions in shops."

#### The Freight Rate Question on the Pennsylvania.\*

Railroad managers feel, and I believe the business men of the country concur, that the great transportation interests must continue to develop. In passenger service, it is necessary that the public should have the fullest measure of safety and comfort which the railroads can furnish. This means the removal of grade crossings, the installation of automatic signals, and the construction of all-steel cars. All of these things have to be paid for. If the investor will not supply us with new money to finance the improvements which are required, those improvements cannot be made. For these general reasons, the railroads

have petitioned the Interstate Commerce Commission to re-open the advance in rates case of 1910.

In so far as the Pennsylvania is concerned, we do not plead poverty or pressing danger. There are many railroad companies, however, to whom this increase is a vital necessity. The position of the Pennsylvania is that an increase is not only warranted but necessary to enable it to continue giving adequate service to the public.

Our company has not been paying large dividends to its shareholders. If all the money which has been put into the property had been supplied by investors, they would today be earning but 4.83 per cent. on their money. At this moment it would be absolutely impossible to find new money if that was all the return that it could be expected to yield.

Though at the moment our company is in strong financial condition, our records show that for several years past certain very definite tendencies have been at work. Our wage payments are now at a rate 37.1 per cent. higher than in 1900. There is a persistent increase in the ratio of cost of operation to earnings. In 1900 (including taxes) 67.73 per cent.; in 1912, 78.09 per cent. This increase in operating expenses is due not only to the increases in wages and taxes, but also to the fact that the railroad is compelled to employ a constantly greater number of men relative to the work to be done. The cost east of Pittsburgh of extra crew laws alone per year is \$756,790.

Up to January 1, 1913, and since August, 1906, our company had paid out \$10,936,134.90 to comply with new laws, federal and state.

A third tendency is toward an unyielding increase in the cost of capital. This is a tendency noticeable throughout the world. The general interest rate is going up, affecting the price of government bonds and securities of all kinds. Railroads must pay more for their money.

It is evident that we are approaching a danger point. We feel that we ought, as a matter of sound policy, to be permitted to earn a greater margin between income and outgo.

Our company feels that it has a peculiar reason for appealing for co-operation in Pittsburgh. During the seven years succeeding January 1, 1902, the Pennsylvania System expended for improvements in Greater Pittsburgh and vicinity an aggregate of \$25,560,000, and your people are now getting the result in ease of traffic movement. During the year 1912, our various companies spent in the Pittsburgh district in round numbers the following sums:

Wages, \$25,000,000; supplies and materials, approximating \$9,000,000; improvements, \$1,000,000; a total of \$35,000,000.

Our prosperity is your prosperity, and vice versa. Given reasonable rates, it is to the public's interest that the railroads earn all the money possible with which to give increasingly good service and to pay reasonable dividends.

The case is very simple. There is no mystery about it. It is for the Interstate Commerce Commission to determine the merits of the case, but we feel that the shippers and the public are entitled to know the why and the wherefore of what we are asking the commission to do.

#### Railway Terminal Discussion in Chicago.

The Chicago city council committee on railway terminals received an ultimatum last Monday to the effect that the city could approve the new terminal plans in which the Pennsylvania, Burlington, and Milwaukee roads are interested or put up with the inadequate facilities of the present Union Station. This was presented in the form of a statement signed by Darius Miller, president of the Chicago, Burlington & Quincy; A. J. Earling, president of the Chicago, Milwaukee & St. Paul; and J. J. Turner, vice-president of the Pennsylvania lines.

The plans previously proposed, with the exception of the Pond plan, and including the "Wacker" or Chicago plan commission plan, the Hunt plan and the Delano plan, which have been offered as alternatives to the plan of the railways interested in the Union Station, all provide for the occupancy of the territory south of Twelfth street, and between State and Canal streets, by passenger terminals. The following objections were presented against them:

"Unnecessary expense, resulting from the separation of through and suburban facilities.

"Drawbridges in close proximity to the entrance of the stations.

"Excessive grades and curves.

\*From an address by Vice-President George D. Dixon, before Pittsburgh Chamber of Commerce, June 6.



"Elimination of the St. Charles Air Line.

"Undesirable stairways within the stations.

"Complexity in case of the Hunt plan.

"The separation of passenger terminals from the heart of the city by an intervening freight and warehouse zone.

"The covering of streets by terminal stations and approaches, converting them into subways or tunnels."

Almost while this ultimatum was being presented to the council committee F. A. Delano, president of the Wabash, in an address at the City Club said that forceful action by Chicago's city officials will compel the railways to solve the terminal problem in harmony with the city's ideas.

In addition to the railway men mentioned on page 1232 of the *Railway Age Gazette* of June 6, as having presented articles to the *Chicago Tribune* discussing the station problem, articles have been published by the following railway presidents: H. G. Hetzler, Chicago & Western Indiana; H. U. Mudge, Chicago, Rock Island & Pacific; F. D. Underwood, Erie; S. M. Felton, Chicago Great Western; Daniel Willard, Baltimore & Ohio; W. C. Brown, New York Central Lines; W. H. Canniff, New York, Chicago & St. Louis; George W. Stevens, Chesapeake & Ohio; E. Pennington, Minneapolis, St. Paul & Sault Ste. Marie.

#### National Society for Promotion of Industrial Education.

The seventh annual convention of this society is to be held at Grand Rapids, Mich., October 19-25, inclusive. On Wednesday and Thursday, October 22 and 23, the National Committee on Vocational Guidance, which will hold a joint meeting with the National Society, will hold its annual session.

#### American Society of Engineer Draftsmen.

The regular monthly meeting will be held on June 19, at 8:15 p. m., at the Engineering Society's building, New York. A paper on arrangement of machines in factories, by S. Warren Potts, will be read, and an illustrated lecture will be given by O. S. Teale on architecture from a phonetic point of view.

#### MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.  
 AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Boston, Mass. Convention, May 19, 1914, St. Louis.  
 AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, New York. Annual meeting, October 14-15, Philadelphia, Pa.  
 AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, East St. Louis, Ill. Annual meeting, June 17-20, Buffalo, N. Y.  
 AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, St. Louis, Mo.; 3d Friday of March and September.  
 AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Donecker, 29 W. 39th St., New York.  
 AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOC.—H. G. McConaughy, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.  
 AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York. Next meeting, November 19, 1913, Chicago.  
 AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Convention, October 21-24, 1913, Montreal.  
 AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago.  
 AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago.  
 AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—A. R. Davis, Central of Georgia, Macon, Ga.  
 AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.; annual, June, 1913.  
 AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wed., except June and August, New York.  
 AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wenlinger, 11 Broadway, New York; 2d Tuesday of each month, New York.  
 AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.  
 AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md. Next convention, January 20-22, 1914, New Orleans, La.  
 ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago. Annual meeting, May 28, Atlantic City, N. J.  
 ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. I., Chicago.  
 ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago. Semi-annual meeting, June 16, 1913, Atlantic City, N. J.; annual convention, October 18-24, Chicago.  
 ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 112 West Adams St., Chicago.  
 ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York. Summer meeting, June 25-26, Charlevoix, Mich.

ASSOCIATION OF WATER LINE ACCOUNTING OFFICERS.—W. R. Evans, Chamber of Commerce, Buffalo, N. Y. Annual meeting, October 8, Philadelphia, Pa.  
 BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—H. A. Neally, Joseph Dixon Crucible Co., Jersey City, N. J. Meeting with American Railway Bridge and Building Association.  
 CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and Aug., Montreal.  
 CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursday, Montreal.  
 CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.  
 CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.  
 CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—L. S. Pomeroy, Old State Capitol building, St. Paul, Minn.; 2d Monday, except June, July, August and September, St. Paul.  
 ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday, Harrisburg, Pa.  
 ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, Oliver building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.  
 FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va. Next convention, June 18, Bluff Point, N. Y.  
 GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.  
 INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, rue de Louvain, Brussels, Belgium. Convention, 1915, Berlin.  
 INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, 922 McCormick building, Chicago.  
 INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 829 West Broadway, Winona, Minn. Next convention, July 15-18, Chicago.  
 INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio. Annual meeting, August 18, Richmond, Va.  
 MAINTENANCE OF WAY & MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—W. G. Wilson, Lehigh Valley, Easton, Pa.  
 MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.  
 MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago. Convention, June 16-18, Atlantic City, N. J.  
 MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Annual meeting, September 9-12, Ottawa, Can.  
 NATIONAL RAILWAY APPLIANCE ASSOC.—Bruce V. Crandall, 537 So. Dearboth St., Chicago. Meetings with Am. Ry. Eng. Assoc.  
 NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.  
 NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.  
 NORTHERN RAILROAD CLUB.—C. L. Kennedy, C. & St. P., Duluth, Minn.; 4th Saturday, Duluth.  
 PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria; 2d Thursday.  
 RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.  
 RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 2 Rector St., New York. Annual dinner, second week in December, 1913, New York.  
 RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.  
 RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec. Engrs.  
 RAILWAY GARDENING ASSOCIATION.—J. S. Butterfield, Lee's Summit, Mo. Next meeting, August 12-15, Nashville, Tenn.  
 RAILWAY DEVELOPMENT ASSOCIATION.—W. Nicholson, Kansas City Southern, Kansas City, Mo.  
 RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa. Convention, October 14, Nashville, Tenn.  
 RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio.  
 RAILWAY SUPPLY MANUFACTURERS' ASSOC.—J. D. Conway, 2135 Oliver bldg., Pittsburgh, Pa. Meetings with M. M. and M. C. B. Assocs.  
 RAILWAY TEL. AND TEL. APPLIANCE ASSOC.—W. E. Harkness, 284 Pearl St., New York. Meetings with Assoc. of Ry. Elec. Sups.  
 RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday except June, July and August.  
 ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. Convention, September 8-12, 1913, Chicago.  
 ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.  
 SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.  
 SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago.  
 SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.  
 SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.  
 TOLEDO TRANSPORTATION CLUB.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.  
 TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillsburn, N. Y. Meeting with Roadmasters' and Maintenance of Way Association.  
 TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.  
 TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.  
 TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.  
 TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library building, St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.  
 TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago. Annual meeting, June 17, Los Angeles, Cal.  
 TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.  
 TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.  
 TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y. Annual meeting, August, 1913, Chicago.  
 UTAH SOCIETY OF ENGINEERS.—R. B. Ketchum, University of Utah, Salt Lake City, Utah; 3d Friday of each month, except July and August.  
 WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.  
 WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.  
 WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Monday in month, except July and August, Chicago.

## Traffic News.

At a meeting of the Western Passenger Association last week it was decided to make no reductions from the uniform rate of two cents a mile for a large number of conventions in the western territory this summer. A committee was appointed to consider the adoption of a uniform charge for special trains and special baggage cars.

### American Association of General Baggage Agents.

At the annual convention of the American Association of General Baggage Agents held at Colorado Springs on May 21, F. J. Moore, general baggage agent of the New York, Chicago & St. Louis, was elected president; George L. Alley, general baggage agent of the Union Pacific, vice-president, and John E. Quick, Toronto, Ont., general baggage agent of the Grand Trunk, was re-elected secretary and treasurer.

### Car Location.

The accompanying table, which is taken from Bulletin 6A of the American Railway Association, gives a summary of freight car location by groups on May 15, 1913.

CAR LOCATION ON MAY 15, 1913.													
	New England.	N.Y., N.J., Del., Md., Pa.	Ohio, Ind., Mich., Western Pa.	Va., W. Va., No. & So. Carolina.	Ky., Tenn., Miss., Ga., Fla.	Iowa, Ill., Wis., Minn.	Mont., Wyo., Neb., Dakotas.	Kans., Colo., Okla., Mo., Ark.	Texas, La., New Mexico.	Oregon, Idaho, Nev., Cal., Ariz.	Can- adian Lines.	Grand Total.	
Total Cars Owned.....	87,899	679,659	251,366	202,881	170,157	473,436	16,597	154,729	29,747	131,678	119,768	2,317,917	
Home Cars on Home Roads.....	42,704	371,824	88,727	108,078	80,278	304,741	5,227	79,083	13,055	74,711	79,275	1,247,703	
Home Cars on Foreign Roads.....	45,195	307,835	162,639	94,803	89,879	168,695	11,370	75,646	16,692	56,967	40,493	1,070,214	
Foreign Cars on Home Roads.....	53,219	312,946	196,948	86,494	82,895	181,460	9,034	64,356	21,605	52,424	43,724	1,105,105	
Total Cars on Line.....	95,923	684,770	285,675	194,572	163,173	486,201	14,261	143,439	34,660	127,135	122,999	2,352,808	
Excess or Deficiency.....	8,024	5,111	34,309	*8,309	*6,984	12,765	*2,336	*11,290	4,913	*4,543	3,231	34,891	
Surplus .....	1,360	6,348	1,311	6,243	2,286	10,662	1,617	7,612	4,264	16,168	3,398	61,269	
Shortage .....	162	1,215	1,338	2,266	2,074	1,029	0	239	231	669	1,752	10,975	
Shop Cars—													
Home Cars in Home Shops.....	4,274	34,429	16,103	11,640	13,120	22,960	610	10,090	1,743	6,075	3,881	124,925	
Foreign Cars in Home Shops....	1,303	10,014	6,507	2,645	2,645	4,278	501	2,241	843	1,933	586	33,496	
Total Cars in Shops.....	5,577	44,443	22,610	14,285	15,765	27,238	1,111	12,331	2,586	8,008	4,467	158,421	
Per Cent. to Total Cars Owned—													
Home Cars on Home Roads.....	48.58	54.71	35.30	53.27	47.18	64.37	31.49	51.11	43.89	56.74	66.19	53.83	
Total Cars on Line .....	106.60	100.75	113.54	95.90	95.90	102.70	85.93	90.82	116.52	96.54	102.70	101.51	
Home Cars in Home Shops.....	4.86	5.07	6.40	5.74	7.71	5.19	3.67	6.52	5.86	4.61	3.24	5.46	
Foreign Cars in Home Shops....	1.12	1.47	2.59	1.30	1.55	.96	3.02	1.36	2.83	1.47	.49	1.47	
Total Cars in Shops.....	5.98	6.54	8.99	7.04	9.26	6.15	6.69	7.88	8.69	6.08	3.73	6.93	

\*Denotes deficiency.

### How to Feed and Rest Live Stock.

In connection with the enforcement of the twenty-eight hour law, the Bureau of Animal Industry of the Department of Agriculture has made investigation of the feeding, watering, and resting of animals while in the course of transportation. For each 24 hours the ration for horses and cattle should be not less than 1¼ lb. of hay to each hundredweight of animal; for sheep, not less than 1½ lb. of hay to each hundredweight of animal, and for hogs, not less than 1 lb. of shelled corn, or its equivalent. Animals, other than hogs, must be unloaded during each period

prescribed by the statute, unless they are in "palace" or similar stock cars. In such cases care should be taken to observe the law. In all cases, if animals are not unloaded, sufficient space to permit all the animals to lie down in the cars at the same time must be provided.

Hogs may be fed, watered, and rested, without unloading, provided (a) the cars are loaded so as to allow all the animals to have sufficient space to lie down at the same time, (b) the trains are stopped for sufficient time to allow the watering troughs to be prepared and to allow every hog time to drink his fill, and (c) care is exercised to distribute properly through each car deck sufficient shelled corn, or its equivalent, in ear corn or other grain, for each hog.

### Car Surpluses and Shortages.

Arthur Hale, chairman of the committee on relations between railroads of the American Railway Association, in presenting statistical bulletin No. 145, giving a summary of car surpluses and shortages by groups from February 28, 1912, to May 31, 1913, says:

"The total surplus on May 31, 1913, was 60,291 cars; on May 15, 1913, was 61,269 cars, and on June 6, 1912, was 89,208 cars. Compared with the preceding period; there is a decrease in the total surplus of 978 cars, of which 114 is in flat, 666 in coal, 748 in miscellaneous, and an increase of 550 in box car surplus. The

increase in box car surplus is in Groups 1 (New England Lines), 2 (New York, New Jersey, Delaware, Maryland and Eastern Pennsylvania), 3 (Ohio, Indiana, Michigan and Western Pennsylvania), 4 (the Virginias and Carolinas), and 8 (Kansas, Colorado, Oklahoma, Missouri and Arkansas). The decrease in flat car surplus is in Groups 1 (as above), 6 (Iowa, Illinois, Wisconsin and Minnesota), 7 (Montana, Wyoming, Nebraska and the Dakotas), 9 (Texas, Louisiana and New Mexico), and 10 (Washington, Oregon, Idaho, California, Nevada and Arizona). The decrease in coal car surplus is in Groups 1, 2, 6 and 10 (as

### CAR SURPLUSES AND SHORTAGES.

Date.	No. of roads.	Surpluses				Total.	Shortages				Total.
		Box.	Flat.	Coal, gondola and hopper.	Other kinds.		Box.	Flat.	Coal, gondola and hopper.	Other kinds.	
Group 1—May 31, 1913.....	7	578	668	0	163	1,409	23	20	95	0	138
" 2— " 31, 1913.....	35	622	57	1,444	1,044	3,167	0	0	1,018	0	1,018
" 3— " 31, 1913.....	31	1,716	185	1,538	1,295	4,734	357	4	109	31	501
" 4— " 31, 1913.....	13	4,424	66	969	975	6,434	179	615	1,464	20	2,278
" 5— " 31, 1913.....	29	1,216	0	318	810	2,344	628	387	249	0	1,264
" 6— " 31, 1913.....	32	3,479	158	2,100	4,178	9,915	1,461	88	35	39	1,623
" 7— " 31, 1913.....	6	193	29	400	328	950	184	4	0	0	188
" 8— " 31, 1913.....	20	3,097	319	2,265	2,735	8,416	63	59	65	3	190
" 9— " 31, 1913.....	15	1,897	340	401	1,231	3,869	0	0	0	14	14
" 10— " 31, 1913.....	25	4,961	953	1,991	7,816	15,721	195	117	16	191	519
" 11— " 31, 1913.....	7	1,666	397	175	1,094	3,332	1,073	362	58	157	1,650
Total .....	220	23,849	3,172	11,601	21,669	60,291	4,163	1,656	3,109	455	9,383

\*Group 1 is composed of New England lines; Group 2—New York, New Jersey, Delaware, Maryland and Eastern Pennsylvania lines; Group 3—Ohio, Indiana, Michigan and Western Pennsylvania lines; Group 4—West Virginia, Virginia, North and South Carolina lines; Group 5—Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida lines; Group 6—Iowa, Illinois, Wisconsin and Minnesota lines; Group 7—Montana, Wyoming, Nebraska, North Dakota and South Dakota lines; Group 8—Kansas, Colorado, Missouri, Arkansas and Oklahoma lines; Group 9—Texas, Louisiana and New Mexico lines; Group 10—Washington, Oregon, Idaho, California, Nevada and Arizona lines; Group 11—Canadian lines.

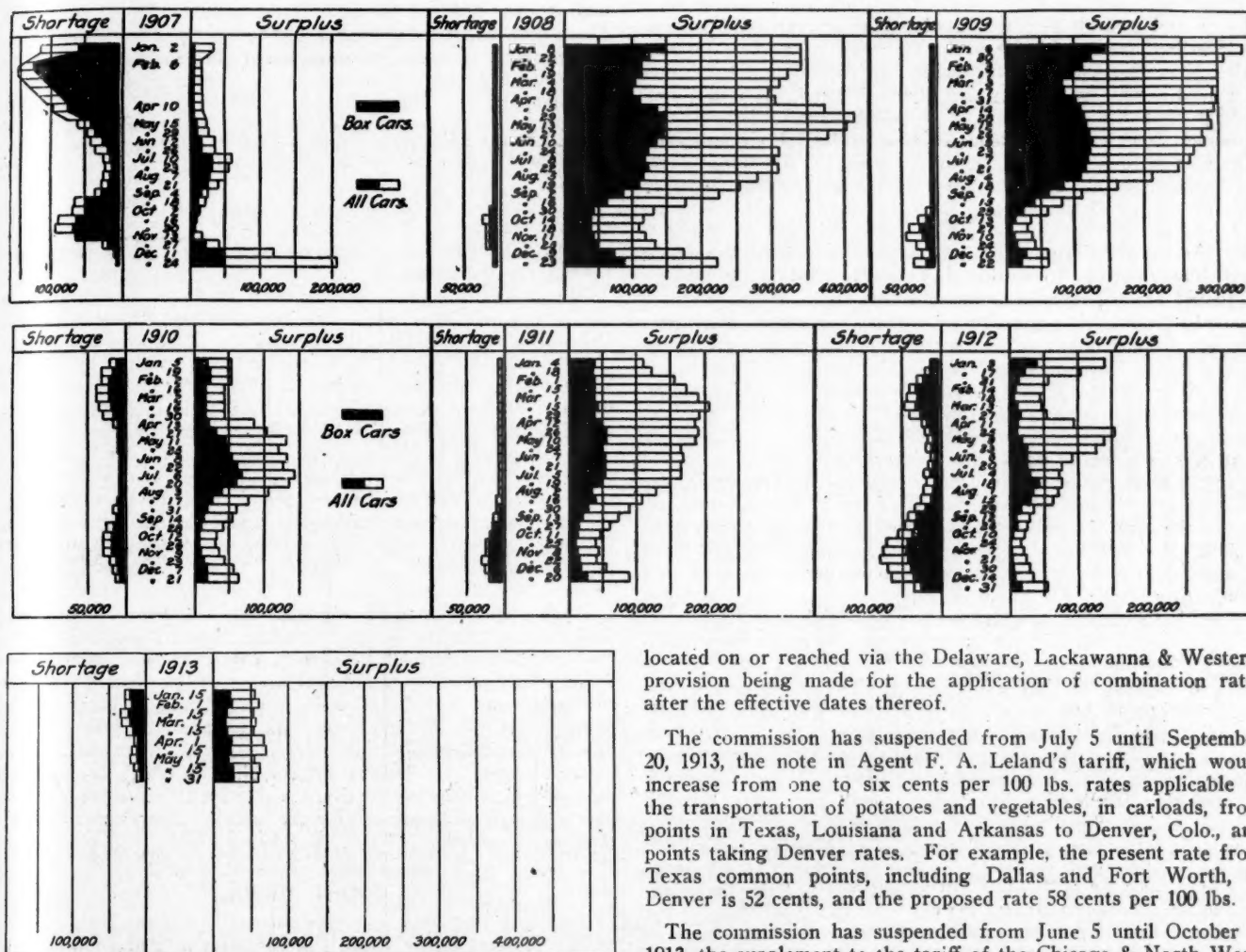


above). The decrease in miscellaneous car surplus is in Groups 3, 4, 7, 8, 9 (as above), and 11 (Canadian Lines).

"The total shortage on May 31, 1913, was 9,383 cars; on May 15, 1913, was 10,975 cars, and on June 6, 1912, was 2,822 cars. Compared with the preceding period; there is a decrease in the total shortage of 1,592 cars, of which 793 is in flat, 1,117 in coal, and an increase of 282 in box and 36 in miscellaneous car shortage. The increase in box car shortage is in Groups 4, 6, 7, and 11 (as above). The increase in miscellaneous car shortage is in Groups 4, 6, 10 and 11 (as above). The decrease in flat car shortage is in all Groups, except 7 and 8 (as above). The de-

The commission has suspended from June 5 until July 8, 1913, the schedules in a supplement to Agent W. H. Hosmer's tariff, which would increase rates on grain and grain products, C. L., from certain points in Illinois, Iowa and Missouri to Toronto, Ont. The amount of the increase proposed is 1½ cents per 100 lbs.

The commission has suspended until September 17, 1913, the schedules in certain tariffs, which would increase rates through the cancellation of present joint class and commodity rates between points located on the Morristown & Erie and points



Car Surpluses and Shortages, 1907 to 1913.

crease in coal car shortage is in all Groups, except 1 and 6 (as above). Compared with the same date of 1912; there is a decrease in the total surplus of 28,917 cars, of which 57 is in box, 335 in flat, 24,184 in coal and 4,341 in miscellaneous cars. There is an increase in the total shortage of 6,561 cars, of which 3,221 is in box, 589 in flat, 2,464 in coal and 287 in miscellaneous cars."

The accompanying table gives surpluses and shortages for the last period covered by the report and the diagram shows total bi-weekly surpluses and shortages, 1907 to 1913, inclusive.

#### INTERSTATE COMMERCE COMMISSION.

The commission has suspended until December 10, 1913, the schedules in certain tariffs, which would advance rates on brooms, C. L., from Chicago and other interstate points to Denver, Colo., and points taking same rates.

The commission has suspended until October 4, 1913, the item in a supplement to Agent F. A. Leland's tariff, which would advance rates on packing house products originating at or destined to points in Arkansas, Louisiana and Oklahoma, through the withdrawal of the fourth class rating thereon.

located on or reached via the Delaware, Lackawanna & Western, provision being made for the application of combination rates after the effective dates thereof.

The commission has suspended from July 5 until September 20, 1913, the note in Agent F. A. Leland's tariff, which would increase from one to six cents per 100 lbs. rates applicable to the transportation of potatoes and vegetables, in carloads, from points in Texas, Louisiana and Arkansas to Denver, Colo., and points taking Denver rates. For example, the present rate from Texas common points, including Dallas and Fort Worth, to Denver is 52 cents, and the proposed rate 58 cents per 100 lbs.

The commission has suspended from June 5 until October 3, 1913, the supplement to the tariff of the Chicago & North Western, which would increase the present rate of 5½ cents per 100 lbs. on paper, C. L., from Milwaukee and Manitowoc, Wis., to Kaukauna, Wis., to 7½ cents per 100 lbs. From protests made against the proposed advanced rate it appears that a considerable quantity of Manila paper is moved from points in the East through Milwaukee and Manitowoc to Kaukauna, at which latter point it is manufactured into bags, and the through rate on such shipments is based on the rates to Milwaukee and Manitowoc plus the rate involved beyond.

#### Increase in Sugar Rates Allowed.

In re suspension of advances on sugar from New Orleans and other points in the South to points in Illinois. Opinion by Commissioner McChord:

Proposed increased rates on sugar and other commodities from New Orleans, La., to Sterling, Ill., found not to be unreasonable or unjustly discriminatory. Order of suspension vacated. Sterling is in the northwestern part of the State of Illinois, on the lines of the Chicago & North Western and the Chicago, Burlington & Quincy, a few miles west of the Illinois Central. Traffic from New Orleans generally moves via the Illinois Central to E. St. Louis, Centralia, or Peoria, Ill., where it is turned over to the Burlington. Sterling is in the Dubuque group. Little

reason is given for the establishment of the Chicago rate on sugar from New Orleans to Sterling, the opinion of the principal witness for respondents being that such rate was made in error and was due to the improper publication of a territorial directory. Nevertheless, in 1908 a similar error was made and Sterling taken out of the Dubuque group and given the Chicago rate on coffee, molasses, sirup and rice, the class rates remaining on the Dubuque basis until 1909, when Sterling was given Chicago class and commodity rates generally. This condition obtained until January, 1913, when the rates from New Orleans to Sterling on all classes and commodities were sought to be made the same as Dubuque. To accomplish this a change was proposed in the territorial directory. The effect of this action on the sugar rate to Sterling meant an advance from 23 to 28 cents and on other classes and commodities a somewhat similar increase. No one at Sterling appears interested in any rate from New Orleans other than that applicable to sugar. In defending the advance the burden was assumed by the Illinois Central. It is not contended that the increase was proposed to afford additional revenue, though this, of course, is a collateral circumstance. There is no doubt that the effort to advance the Sterling rate is the result of the Clinton case (Docket No. 4,964); however, it is urged by respondents that the existing rates to Sterling are not only too low, but are out of line with the rates obtaining in this general territory. The few exhibits submitted cannot be said to bear out this contention, and there is substantially nothing to justify passing upon the reasonableness *per se* of the proposed rate. In fact, this is a question with which protestants specifically aver they are not interested, their only complaint being directed to the question of rate relationship. The proposed difference of 5 cents per 100 lbs. against Sterling is a material handicap, considering the fine margin of profit upon which sugar is handled, prices being figured in hundredths of a cent per pound. To put it briefly, we are asked to determine whether Sterling should be in the Dubuque or in the Chicago group. Geographically the Chicago group does not extend west of the Illinois Central except in the case of Sterling, and the proposed change would seem logical. But however logical may be the geographical boundary of a group, it must not give to any point an unreasonable or discriminatory rate. All of these rates reflect the lake-and-rail competition from the east, and compared with the fifth-class rate, to which sugar belongs, the proposed rate is not unreasonable. The protestants in the instant case are not interested in the rates to Clinton, as they experience practically no competition from that point, but are chiefly concerned with the Freeport, Rockford and Peoria rates—the Chicago group. However, where rates are made on the group principle there must necessarily be a demarcating line. It is proposed to have that line follow the rails of the Illinois Central, running north and south through Illinois, and to this limitation there appears no injustice. We cannot find that the proposed rates will unjustly discriminate against Sterling, and, as we do not find the rates to be unreasonable, the order of suspension will be vacated and the investigation dismissed. (27 I. C. C., 122.)

#### Complaint Dismissed.

*Consolidation Coal Company v. Baltimore & Ohio et al.*  
*Opinion by the commission:*

The complainant made several shipments of coal and contends that excessive charges were exacted as a result of the failure of the carrier to deliver cars of the capacity ordered. In some cases cars of 40,000 lbs. capacity were ordered and cars of 60,000 lbs. capacity were delivered. The tariffs of the defendant provided that where cars of greater capacity were delivered than were ordered by the shipper, the minimum of the car ordered would be used unless the actual weight of the shipment was greater, in which case the actual weight would be used. The carriers charged on the basis of the minimum weight of 60,000 lbs., although the actual weight was less. The commission decided that this resulted in an overcharge to the shipper and reparation was awarded on these shipments. In another case the tariffs of the defendant provided only one carload minimum on coal, 60,000 lbs. The complainant ordered cars of 40,000 lbs. capacity and received cars of 60,000 lbs. capacity. The commission decided that the shipper could not order cars of less capacity than the minimum prescribed in the tariff and denied reparation on these shipments, although the actual weight was less than 60,000 lbs. (27 I. C. C., 105.)

#### Cement Rate Reduced.

*Oklahoma Portland Cement Company v. Missouri, Kansas & Texas et al.* *Opinion by the commission:*

The complainant contends that Ada, Okla., is discriminated against in favor of Harrys and Eagle Ford, Tex., because the rates on Portland cement from Ada to points in Texas are more per mile than the rates on the same commodity from Harrys and Eagle Ford to points in Oklahoma. The commission averaged the rates from the points in question to ten destinations and found that the average distance from Ada was 194 miles and that the average rate was 19.8 cents per 100 lbs. compared with an average distance from Harrys of 205 miles and an average rate of 15.4 cents per 100 lbs. The defendants feared that if they reduced the rates from Ada to Texas points the Texas Railroad Commission would require them to reduce rates on intrastate traffic. The commission decided that this did not constitute a sound reason for the maintenance of unreasonable interstate rates. The commission ordered that in the future the rates from Ada to Texas points should not exceed for equal distances the rates from Harrys and Eagle Ford to points in Oklahoma. (27 I. C. C., 101.)

#### Overcharges Collected.

*Central Commercial Company v. Louisville & Nashville.*  
*Opinion by the commission:*

A carload of rosin was consigned from Pensacola, Fla., to the complainant at Chicago. Shortly after the shipment had left Pensacola, the complainant requested that it be diverted to Cincinnati, and this change in destination was effected by the defendant when the car reached Nashville, Tenn. Nashville is directly intermediate to Cincinnati and Chicago, and no additional or out-of-line haul was made necessary by the diversion. The defendant's tariffs provided that shipment would be consigned to new destination, under the above circumstances only on the basis of full tariff rates to and from the point at which the re-consignment was effected. Charges of 44 cents per 100 lbs. were collected, made up of 17 cents to Nashville and 27 cents from Nashville to Cincinnati. The through rate from Pensacola to Cincinnati was 19 cents per 100 lbs., and the complainant contends that the charges collected were unreasonable to the extent that they exceed that rate, plus a reasonable charge for the diversion in transit to Cincinnati. The commission decided that where no additional or out-of-line haul is involved re-consignment and diversion in transit should be permitted on the basis of the through rate from the point of origin to the new destination, plus a reasonable charge for extra services incident thereto, and decided further that the rate charged was unreasonable to the extent that it exceeded 19 cents per 100 lbs., plus a charge of \$3 per car for the additional services. Reparation was awarded. (27 I. C. C., 114.)

#### COURT NEWS.

The Supreme Court of the United States in a decision handed down this week, has decided that the street railway running between Council Bluffs, Iowa, and Omaha, Nebraska, across the Missouri River, is not subject to the act to regulate commerce; and, therefore, that an order of the Interstate Commerce Commission regulating fares on this line is invalid.

The decision of the Supreme Court of the United States in the Minnesota rate cases is reported in another column of this issue. Cases involving questions of the conflict of federal and state authority in the regulation of railroads in other states are now pending before the court, and it is expected that decisions in these will be handed down next week. These cases came from Missouri, Arkansas, Oregon, Kentucky and West Virginia.

Under their contract with the Polk County, Ia., board of supervisors three Council Bluffs attorneys filed suit in the District Court at Des Moines, Ia., last week against the Chicago, Rock Island & Pacific Railroad Company to enforce the collection of \$15,559,400 in alleged unpaid taxes. Interest at six per cent. together with a 50 per cent. statutory penalty is demanded. The suit was brought in the name of the county treasurer. The Greater Des Moines committee, fearing that the prosecution of the suit might interfere with the extensive improvements which the Rock Island is contemplating in Des Moines, has started an action against the attorneys to have the contract set aside.



## REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF APRIL, 1913.

Name of road.	Average mileage operated during period.	Operating revenues				Operating expenses			Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decr.) last year.
		Freight.	Passenger.	Total.	Maintenance Way and structures.	Of equipment.	Traffic.	Trans- portation.					
Atlanta & West Point.....	93	\$46,685	\$36,326	\$83,029	\$10,761	\$20,673	\$4,776	\$32,590	\$4,833	\$73,634	\$6,344	\$13,144	—\$6,630
Atlanta, Birmingham & Atlantic.....	645 <sup>1</sup>	269,298	44,870	314,168	42,043	21,423	1,881	113,600	10,922	224,784	14,337	30,177	25,219
Atlantic City.....	167	66,345	65,234	131,579	35,092	21,423	1,881	73,689	1,173	132,258	9,000	9,000	4,538
Belt Ry. Co. of Chicago.....	21	1,180,028	3,873,797	5,053,825	443,824	685,343	32,982	1,898,504	99,927	3,160,580	166,221	557,490	13,034
Boston & Maine.....	2,244	148,153	7,950	156,103	27,372	24,142	1,277	53,485	6,202	112,484	2,200	45,638	—57,554
Buffalo & Susquehanna R. R.....	91	41,127	7,519	48,646	12,532	27,316	1,482	23,217	2,523	66,070	1,700	16,272	8,743
Butte, Anaconda & Pacific.....	74 <sup>2</sup>	92,819	8,856	101,675	10,293	22,500	611	48,222	3,435	85,101	2,000	24,566	12,745
Canadian Pacific Lines in Maine.....	233	137,810	60,019	197,829	21,667	11,567	5,055	83,752	5,312	150,532	10,000	55,099	14,588
Central of Georgia.....	1,915	696,457	267,486	963,943	1,062,679	173,305	36,620	383,035	40,391	852,719	49,915	165,352	—41,994
Central of New Jersey.....	676 <sup>3</sup>	1,749,905	414,191	2,164,096	255,985	373,625	24,091	682,432	44,091	1,380,753	122,041	714,789	655,276
Central Vermont.....	411	246,930	75,712	322,642	33,113	16,373	8,081	163,373	7,104	275,570	16,927	58,779	23,500
Chesapeake & Ohio Lines.....	2,324 <sup>4</sup>	1,617,776	436,049	2,053,825	400,139	613,333	57,930	886,604	63,451	2,021,757	127,155	213,500	—723,328
Chicago & Erie.....	270	2,966,631	63,590	3,030,221	99,152	84,746	19,520	234,288	11,720	2,944,440	16,000	49,302	—71,050
Chicago, Indiana & Southern.....	359	275,901	25,114	299,015	46,862	94,256	10,022	131,037	11,859	294,036	15,282	17,403	1,256
Chicago, Indianapolis & Louisville.....	617	454,265	120,667	574,932	107,717	86,157	17,153	251,751	14,059	476,837	165,328	137,030	62,013
Chicago, Peoria & St. Louis.....	255	83,324	21,602	104,926	19,709	26,411	6,897	60,119	5,699	118,985	28,308	10,357	2,464
Chicago, Rock Island & Pacific.....	7,566 <sup>5</sup>	3,581,169	1,347,199	4,928,368	627,112	719,359	152,307	2,237,011	149,989	3,889,572	237,315	805,335	—114,444
Chicago, Terre Haute & Southeastern.....	351	142,115	13,322	155,437	39,973	43,018	3,437	51,431	3,330	147,215	13,640	3,065	2,113
Cincinnati Northern.....	245	57,921	13,393	71,314	39,352	27,455	2,471	46,074	3,153	118,597	11,952	47,432	—56,345
Cleveland, Cincinnati, Chic. & St. Louis.....	2,014 <sup>6</sup>	1,483,588	509,761	1,993,349	808,462	574,119	76,174	1,078,902	59,831	2,597,488	103,800	485,145	—81,299
Colorado & Southern.....	1,069 <sup>7</sup>	1,335,351	94,648	1,430,000	195,437	169,667	13,357	280,410	24,618	1,144,583	29,175	58,468	531,738
Delaware & Hudson Co.—Railroad Dept.....	859 <sup>8</sup>	1,617,357	212,627	1,830,000	159,851	349,636	21,352	680,282	68,809	1,280,814	80,400	55,268	—20,691
Denver & Rio Grande.....	2,550 <sup>9</sup>	1,313,480	420,229	1,733,709	358,838	379,014	41,871	541,371	54,672	1,375,966	437,441	3,500	—4,061
Denver, Northwestern & Pacific.....	215	58,620	15,641	74,261	22,286	18,099	2,668	31,365	6,280	81,198	3,500	—5,930	—10,924
Detroit & Toledo Shore Line.....	79	86,414	.....	86,414	7,873	5,492	1,141	26,302	2,329	43,137	7,236	36,648	—12,178
Detroit River Tunnel.....	2	.....	123,588	123,588	2,407	2,932	.....	9,678	25	15,042	.....	102,546	12,637
Detroit, Toledo & Ironmont.....	441	84,665	8,283	92,948	55,963	101,123	2,420	55,817	5,639	220,962	5,000	—123,437	—120,270
Duluth & Iron Range.....	273 <sup>10</sup>	22,463	234,800	257,263	71,390	47,599	941	84,386	10,576	214,886	13,713	21,836	27,302
Erie.....	1,988 <sup>11</sup>	3,006,952	736,576	3,743,528	371,819	804,374	106,618	1,518,146	99,051	2,900,008	151,015	1,020,518	486,404
Galveston, Harrisburg & San Antonio.....	1,338	604,026	291,697	895,723	131,614	185,509	33,815	395,866	31,436	778,240	28,590	121,639	97,131
Georgia.....	397	171,137	66,411	237,548	29,691	44,092	8,052	136,359	8,565	230,157	3,079	22,952	—9,964
Georgia, Southern & Florida.....	395	124,826	59,506	184,332	28,420	44,430	8,052	87,078	9,301	177,281	10,106	23,009	9,985
Great Northern.....	7,765 <sup>12</sup>	4,494,310	1,194,422	5,688,732	1,391,050	834,710	104,504	1,735,345	109,803	4,175,412	381,111	1,516,412	89,293
Gulf, Colorado & Santa Fe.....	1,595 <sup>13</sup>	717,899	198,656	916,555	131,702	185,963	25,142	456,061	30,484	829,352	38,407	126,805	82,460
Hocking Valley.....	352 <sup>14</sup>	534,841	74,380	609,221	72,356	144,911	8,232	198,668	13,028	437,195	37,500	178,134	157,291
Houston, East & West Texas.....	191	75,131	28,901	104,032	33,694	16,265	2,179	42,176	4,058	98,372	3,833	8,313	—7,980
Houston & Texas Central.....	789	331,699	141,656	473,355	110,219	81,156	24,338	243,895	17,683	477,291	19,957	13,273	37,402
Indiana Harbor Belt.....	105	.....	286,883	286,883	33,793	36,015	3,068	122,236	7,925	203,037	5,500	78,353	12,648
Lake Erie & Western.....	906 <sup>15</sup>	374,293	63,359	437,652	73,552	119,071	11,402	193,445	12,074	385,408	20,500	60,168	23,937
Lake Shore & Michigan Southern.....	1,872 <sup>16</sup>	3,367,841	981,114	4,348,955	628,217	971,519	77,075	1,639,817	89,246	3,405,874	150,000	1,334,852	282,280
Lehigh & Hudson River.....	97	149,344	3,223	152,567	16,424	22,147	1,361	57,679	6,568	104,179	4,000	48,856	26,584
Louisiana & Arkansas.....	255	122,650	19,471	142,121	19,883	20,440	2,496	35,645	5,078	83,542	4,500	59,566	12,065
Louisiana Ry. & Navigation.....	351	131,356	22,610	153,966	23,916	19,960	5,895	60,662	7,563	117,996	4,500	42,399	29,588
Louisiana Western.....	208	124,017	53,911	177,928	19,707	35,903	6,437	60,243	5,731	128,021	7,406	55,550	11,184
Louisville, Henderson & St. Louis.....	200	61,691	25,263	86,954	23,002	15,737	4,378	36,609	2,752	82,478	3,000	8,717	—6,609
Michigan Central.....	1,817	2,163,011	679,353	2,842,364	421,145	380,449	65,863	1,220,013	52,337	2,139,806	1,009,759	891,958	195,838
Missouri, Kansas & Texas System.....	3,817 <sup>17</sup>	1,465,775	675,287	2,141,062	402,479	381,385	60,766	998,747	94,595	1,337,972	103,663	284,945	11,830
Mobile & Ohio.....	1,114	719,180	101,140	820,320	115,705	150,832	12,167	343,468	33,144	680,689	30,663	160,975	120,796
Morgan's La. & Tex. R. R. & S. S. Co.....	404	233,489	95,997	329,486	70,773	63,119	12,167	172,577	16,943	335,579	17,718	9,873	—31,677
Nashville, Chattanooga & St. Louis.....	1,231 <sup>18</sup>	794,323	218,196	1,012,519	155,641	191,540	39,199	432,096	31,462	849,938	245,782	218,051	—15,231
New Orleans, Mobile & Chicago.....	547	184,887	26,896	211,783	27,566	18,941	3,626	76,610	7,784	147,956	7,409	69,055	61,064
New Orleans, Texas & Mexico.....	286 <sup>19</sup>	97,445	14,842	112,287	17,143	10,265	3,667	58,318	7,041	96,434	1,440	20,986	199
New York Central & Hudson River.....	3,750 <sup>20</sup>	5,740,178	2,683,582	8,423,760	1,313,240	1,792,927	182,870	3,572,755	220,079	7,081,871	531,569	1,757,808	837,725
New York, Ontario & Western.....	566	594,421	98,597	693,018	98,527	146,574	6,574	273,323	14,802	539,800	18,167	155,467	270,164
New York, Susquehanna & Western.....	154 <sup>21</sup>	201,477	44,108	245,585	22,361	104,221	2,741	104,221	5,654	164,743	11,898	95,565	—1,231
Norfolk & Western.....	2,034 <sup>22</sup>	2,694,238	338,648	3,032,886	571,999	640,091	57,585	1,076,870	62,698	2,409,243	122,000	618,713	—560,618
Norfolk & Western.....	6,314 <sup>23</sup>	4,144,233	1,198,500	5,342,733	1,140,478	779,774	107,279	1,945,394	89,380	4,062,305	370,547	1,267,661	—387,309

Mileage operated at end of previous period—1,662; \* 77; \* 672; \* 2,289; \* 7,565; \* 2,012; \* 1,075; \* 2,545; \* 274; \* 1,995; \* 11,345; \* 13,597; \* 33,353; \* 14,886; \* 14,775; \* 14,339; \* 14,230; \* 14,277; \* 14,552; \* 14,018; \* 6,032. — Indicates Deficits, Losses and Decreases.

## Railway Officers.

### Executive, Financial and Legal Officers.

H. C. Hooker, private secretary to President F. D. Underwood of the Erie at New York, has been appointed assistant to the president.

G. H. Parker, general accountant of the Delaware & Hudson, has been appointed assistant to third vice-president, with headquarters at New York.

Alexander Robertson, formerly president of the Western Maryland, has been appointed assistant to the president of the Missouri Pacific, with office at St. Louis.

B. L. Winchell resigned as president of the St. Louis & San Francisco, and the Chicago & Eastern Illinois at the time of his recent appointment as a receiver of the St. Louis & San Francisco.

B. L. Winchell and Thomas H. West, receivers of the St. Louis & San Francisco, announce the appointment of A. S. Greig as assistant to the receivers, with headquarters at St. Louis, Mo., effective June 3.

C. E. Schaff, president of the Missouri, Kansas & Texas, has been elected president also of the Houston & Brazos Valley, the election taking effect on June 1, when the M. K. & T. began the operation of the H. & B. V.

J. T. Morrison has been elected vice-president of the Pullman Railroad Company, with headquarters at Chicago, to succeed Thomas Dunbar, resigned. Mr. Morrison will have charge of all departments, under the direction of the president.

J. H. Hill, manager, secretary and treasurer of the Galveston, Houston & Henderson, has been elected vice-president and general manager. J. E. O'Neill, auditor, has been elected secretary in place of Mr. Hill. Mr. Hill still continues to hold the office of treasurer.

W. J. Jackson, who has been vice-president and general manager of the Chicago & Eastern Illinois, and who was last week appointed a receiver of the company, as mentioned elsewhere, has been elected president, succeeding B. L. Winchell. Alvin W. Krech, of New York, has been elected vice-president.

### Operating Officers.

James Bain, superintendent of the Halifax & Southwestern, Bridgewater, N. S., has been made general superintendent, with office at Halifax.

R. D. Purvis, heretofore a chief train despatcher on the Atlantic Coast Line, has been appointed trainmaster of the Georgia & Florida, with office at Douglas, Ga.

F. B. Miller, superintendent of the Denver, Northwestern & Pacific, with office at Denver, Colo., remains in the same position with its successor, the Denver & Salt Lake.

W. M. Tisdale has been appointed a special agent of the operating department, Eastern Lines, of the Grand Trunk, with headquarters at Montreal, Que., succeeding J. H. Hodge, transferred.

H. D. Grout, assistant general superintendent of the Canadian Pacific, Atlantic Division, at St. John, N. B., has been appointed acting general superintendent in place of William Downie, who has been granted leave of absence for a year.

R. Armstrong, heretofore superintendent of district 3, Saskatchewan division, Canadian Pacific, at Saskatoon, Sask., has been appointed superintendent district 4 of the Manitoba division, vice E. W. DuVal, transferred. Office at Souris, Manitoba.

E. W. DuVal, heretofore superintendent of district 4, Manitoba division, Canadian Pacific, at Souris, Manitoba, has been appointed superintendent of district 3 of the Saskatchewan division, vice R. Armstrong, transferred. Office at Saskatoon, Saskatchewan.

Michael A. McCarthy, who has been appointed assistant superintendent of telegraph of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton, with office at Cincinnati,

Ohio, entered the service of the Baltimore & Ohio in July, 1894, as a yard clerk at Cincinnati. The following March he was promoted to despatcher and became chief despatcher in April, 1910. He was again promoted to division operator in March, 1912, which position he held at the time of his recent appointment as assistant superintendent of telegraph as above noted.

J. W. Knightlinger, whose appointment as superintendent of the Louisiana Western and Morgan's Louisiana & Texas Railroad & Steamship Company, with headquarters at Lafayette, La.,



J. W. Knightlinger.

has already been announced in these columns, began railway work in December, 1892, as messenger and train caller for the Chicago, Milwaukee & St. Paul at Mason City, Ia. Later he was promoted to operator and agent, and in 1894 he went to the Montana Union, where he remained until 1898 as telegraph operator and train despatcher. From the latter date to 1900 he was with the Atchison, Topeka & Santa Fe successively as operator, train despatcher and brakeman. He was then employed by the St. Louis & San Francisco until March, 1903, as telegraph operator, train despatcher and brakeman. The following three years Mr. Knightlinger was with the Union Pacific as telegraph operator, train despatcher and chief clerk to the superintendent. He resigned in March, 1909, to go to the Southern Pacific, and until January of this year was division agent and trainmaster on the Sacramento division, Mountain district. In March he was made assistant superintendent of Morgan's Louisiana & Texas Railroad & Steamship Company at New Orleans, La., which position he held until June 1, when he was appointed superintendent of that company and the Louisiana Western, comprising the Louisiana lines of the Southern Pacific.

F. B. Mitchell, superintendent of the Illinois division of the Baltimore & Ohio Southwestern at Flora, Ill., has been appointed superintendent of the Toledo division of the Cincinnati, Hamilton & Dayton, with headquarters at Dayton, Ohio, succeeding J. J. Corcoran, resigned to go to the Pere Marquette. E. W. Scheer, assistant to the general superintendent of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton at Cincinnati, Ohio, succeeds Mr. Mitchell. F. D. Batchellor, assistant general superintendent at Cincinnati, has been appointed assistant superintendent of the Toledo division of the C. H. & D., with headquarters at Dayton. J. B. Carothers, who was on the staff of the chief engineer, has been appointed assistant to general superintendent, and Charles A. Plumly, assistant superintendent of telegraph at Cincinnati, has been appointed assistant to the general superintendent of the B. & O. S. W., and the C. H. & D., both with offices at Cincinnati. Michael A. McCarthy succeeds Mr. Plumly.

F. B. Mitchell, who has been appointed superintendent of the Toledo division of the Cincinnati, Hamilton & Dayton, with headquarters at Dayton, Ohio, was born on August 18, 1879, at Cuba, Ohio, and was educated in grammar and high schools. He began railway work on October 23, 1899, as a telegraph operator on the Baltimore & Ohio Southwestern, and later was an operator on the Baltimore & Ohio. From May, 1901, to March of the following year, he was secretary to superintendent of the Baltimore & Ohio Southwestern, and from April to September, 1902, was car distributor of the Chicago Great Western at St. Paul, Minn. He was then secretary to superintendent of the Baltimore & Ohio at Chicago, and from January to December, 1903, was secretary to the general superintendent of the Baltimore & Ohio Southwestern at Cincinnati. He was then car service clerk until April, 1910, when he became assistant train-



master at Seymour, Ind. On March 1, 1912, he was made assistant superintendent at Cincinnati, and one month later was appointed superintendent of the same road at Flora, Ill., which position he held at the time of his recent appointment as above noted.

Edward Waldemar Scheer, who becomes superintendent of the Illinois division of the Baltimore & Ohio Southwestern, with headquarters at Flora, Ill., was born on April 28, 1875, at Zaleski, Ohio, and was educated in the common schools. He began railway work on February 10, 1890, as messenger on the Cincinnati, Washington & Baltimore, and was later a stenographer with its successor, the Baltimore & Ohio Southwestern. In December, 1895, he was appointed chief clerk to division superintendent, and four years later was made secretary to vice-president and general manager. From February, 1906, to June, 1912, he was chief clerk to general manager, and assistant secretary and chief clerk to general superintendent of the same road at Cincinnati; and since June, 1912, has been assistant to general superintendent of the Baltimore & Ohio Southwestern and Cincinnati, Hamilton & Dayton.

F. D. Batchellor, who has been appointed assistant superintendent of the Toledo division of the Cincinnati, Hamilton & Dayton, with headquarters at Dayton, Ohio, entered the service of the Baltimore & Ohio in July, 1903, as a member of an engineering corps. He was promoted to assistant engineer of the Indiana division in March, 1911, and was made assistant to the general superintendent, with office at Cincinnati, in December, 1912, which position he held at the time of his recent appointment as superintendent of the Toledo division of the C. H. & D., as above noted.

Charles A. Plumly, who has been appointed assistant to the general superintendent of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton, with headquarters at Cincinnati, Ohio, has been in the operating department of the Baltimore & Ohio since November, 1887, at which time he entered the service as an operator. He was promoted to despatcher at Chillicothe in June, 1903, becoming night chief despatcher in October, 1905. He was made day despatcher in September, 1907, and in July, 1910, was appointed division operator at Cincinnati. In March, 1912, he became trainmaster at Seymour, Ind., and was appointed assistant superintendent of telegraph of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton in January, 1913, which position he held at the time of his recent appointment as assistant to general superintendent as above noted.

#### Traffic Officers.

James F. Peters has been appointed general colonization agent of the Marshall & East Texas, with office at Chicago.

W. H. Paul is now general freight and passenger agent of the Denver & Salt Lake, formerly the Denver, Northwestern & Pacific. His headquarters are at Denver, Colo.

T. A. Sherwood, contracting agent of the Wabash at Alton, Ill., has been promoted to traveling freight agent, with office at Memphis, Tenn., succeeding C. L. Montgomery, resigned.

G. A. Deuel, commercial agent of the Texas & Pacific at New York, has been appointed division freight agent, with headquarters at El Paso, Tex., succeeding W. A. Scrivner, resigned.

E. K. Yaeger, soliciting freight agent of the Georgia Southern & Florida at Chicago, has been appointed commercial agent, with office at St. Louis, Mo., succeeding J. P. Higgins, resigned. J. L. Laetch succeeds Mr. Yaeger.

J. C. Eaton has been appointed general agent of the passenger department of the Northern Pacific, with headquarters at Cincinnati, Ohio, to succeed M. J. Costello, district passenger agent, resigned to engage in other business.

T. H. Hopkins has been appointed assistant general passenger agent of the Louisiana Railway & Navigation Co., with headquarters at Shreveport, La.; and J. T. Young has been appointed city passenger agent at 709 Gravier street, New Orleans.

C. E. Spear has been appointed commercial agent of the Southern Pacific at Santa Barbara, Cal., in place of C. C. Chisholm, who has been made district freight and passenger agent at Seattle, Wash. L. H. Schachtmayer succeeds Mr. Spear as

commercial agent at Long Beach, Cal., and H. C. Emery takes the place of Mr. Schachtmayer as traveling freight and passenger agent, with office at San Diego, Cal. R. D. Jennings has been appointed traveling freight agent and Guy Hill traveling passenger agent, both with headquarters at Seattle, Wash. C. M. Andrews and A. D. Wick have been appointed traveling freight agents, with headquarters at Tacoma, Wash.

George Z. Philips, whose appointment as assistant general passenger agent of the Seaboard Air Line, with headquarters at Jacksonville, Fla., has been announced in these columns, was born on January 23, 1878, at Washington, D. C., and was educated at High School and at Georgetown Law School. He began railway work on August 15, 1899 as a clerk in the general passenger agent's office of the Southern Railway, and in 1901 became city passenger agent of the Seaboard Air Line at Washington. The following year he was appointed traveling passenger agent at New York, of the same road, remaining in that position until 1908, when he was promoted to division passenger agent, with headquarters at Washington. In 1912, he became general passenger agent of the Baltimore Steam Packet Company at Baltimore, Md., which position he held at the time of his appointment as assistant general passenger agent of the Seaboard Air Line as above noted.

Walter Galt Barnwell, who on June 1, became assistant freight traffic manager of the Atchison, Topeka & Santa Fe Coast Lines, with headquarters at San Francisco, Cal., was



W. G. Barnwell.

born April 13, 1865, at Danville, Que. He began railway work in 1881 as agent and clerk in the office of auditor of freight accounts of the Canada Atlantic, and subsequently from 1884 to 1891 he was agent and division clerk in the superintendent's office of the Fergus Falls and Breckenridge divisions of the Great Northern. He was then with the Southern California until May, 1898, successively as cashier at Redlands, Cal., agent at Santa Ana, Cal., contracting agent and commercial agent. On the latter date he was promoted to general agent of the freight department

at Los Angeles, Cal., and in 1900 he was made assistant general freight agent of that road, the Santa Fe Pacific and the San Francisco & San Joaquin Valley, which roads now comprise the Coast Lines of the Atchison, Topeka & Santa Fe. In April, 1905, Mr. Barnwell became general freight agent of the Coast Lines, which position he held until his recent promotion to assistant freight traffic manager, as above noted.

#### Engineering and Rolling Stock Officers.

J. Edgar Johnson has been appointed division engineer of the Pere Marquette at Saginaw, Mich.

J. E. Willoughby has been appointed assistant chief engineer of the Atlantic Coast Line, with office at Wilmington, N. C.

P. H. Cosgrave has been appointed general car foreman of the Oregon Short Line, with headquarters at Salt Lake City, Utah.

George S. McKee has been appointed superintendent of motive power of the San Antonio & Aransas Pass, with headquarters at San Antonio, Tex.

D. A. MacMillan has been appointed assistant general air brake inspector of the Northern Pacific, with headquarters at St. Paul, Minn., succeeding J. M. Boyd, promoted, effective June 15.

George Thompson, superintendent of motive power, and L. D. Blauvelt, chief engineer of the Denver, Northwestern & Pacific, with headquarters at Denver, Colo., remain in the same positions with its successor, the Denver & Salt Lake.

E. F. Wendt has resigned as assistant engineer of the Pittsburgh & Lake Erie to become a member of the board of valuation engineers appointed by the Interstate Commerce Commission, as previously announced. A photograph and sketch of Mr. Wendt were published in the *Railway Age Gazette* May 16, page 1065.

Joseph Acker, general car foreman of the Chicago, Rock Island & Pacific at Horton, Kan., has been appointed superintendent of the car department of the Chicago Terminal division, and G. A. Hull, chief clerk to the mechanical engineer, has been appointed assistant superintendent of the car department, both with headquarters at Blue Island, Ill.

Edwin G. Chenoweth, whose appointment as mechanical engineer in charge of car design, of the Rock Island Lines, with headquarters in Chicago, has been announced in these columns,



Edwin G. Chenoweth.

was born on December 18, 1873, at Union City, Ind. He was graduated from Purdue University in 1895, and went with the Erie as special apprentice and machinist, during which time he took a post-graduate course at Purdue University. Mr. Chenoweth later served the Erie as air brake instructor and foreman of the air brake department at Huntington, Ind., until 1901, when he went to the Pennsylvania as a draftsman. He occupied a like position with the Pere Marquette, the Lake Shore & Michigan Southern, and the Philadelphia & Reading, leaving the latter road in 1906, to return to the Erie as

mechanical engineer at Meadville, Pa. He was appointed assistant superintendent of the car department of the Rock Island Lines in July, 1912, holding that position until his recent appointment as mechanical engineer in charge of car department work.

A. M. Turner has been appointed district engineer in charge of construction on the Chicago, St. Louis, Cairo and Michigan divisions of the Cleveland, Cincinnati, Chicago & St. Louis and of the Peoria & Eastern Railway, west, with headquarters at Indianapolis, Ind. W. S. Burnett has been appointed district engineer in charge of construction on the Cleveland-Indianapolis and Cincinnati-Sandusky divisions of the same road and the Peoria & Eastern, east, with headquarters at Middletown, Ohio.

C. A. Henry, foreman of the erecting shop of the Chicago, Burlington & Quincy at Aurora, Ill., has been appointed superintendent of shops at West Burlington, Iowa, succeeding J. A. Carney, who has been appointed superintendent of shops at Aurora, in place of A. Forsyth, deceased. Mr. Carney was educated at Massachusetts Institute of Technology, and his entire railway service has been with the Chicago, Burlington & Quincy, with which road he began work in October, 1891, as laboratory assistant. From December, 1894, to April, 1897, he was engineer of tests, and then for four years was master mechanic of the St. Louis division. In April, 1901, Mr. Carney was made superintendent of the West Burlington shops, which position he held until June 1 of this year, when he was appointed superintendent of the Aurora shops as above noted.

George S. Goodwin, whose appointment as mechanical engineer of the Rock Island Lines, in charge of locomotive design, with headquarters at Chicago, was announced in our issue of last week, was born November 29, 1876, at Corinth, Me. He was graduated from Cornell University in mechanical engineering in 1899, having spent summers in railway shop work and specialized in railway engineering during the last year. He entered the service of the Chicago, Milwaukee & St. Paul in June, 1899, as special apprentice at West Milwaukee, Wis. Later he was engaged in special work, test work, drawing room work, etc., and had

charge of the company's dynamometer car while doing test work, both on the St. Paul and on foreign lines. In May, 1904, Mr. Goodwin went to the Great Northern at St. Paul, Minn., in the mechanical engineer's office, performing duties along the line of standardization of locomotive and car details and also the design of new equipment. He was made chief draftsman of the Chicago, Rock Island & Pacific at Chicago in January, 1906, at which time the road began to build steel cars instead of wood. He was promoted to assistant mechanical engineer in May, 1910, at Silvis, Ill., which position he held until his recent appointment as mechanical engineer, as above noted.

#### Purchasing Officers.

F. A. Bushnell, assistant purchasing agent of the Great Northern, has been appointed purchasing agent, with office at St. Paul, Minn.

C. C. Anthony, purchasing agent of the Denver, Northwestern & Pacific, with office at Denver, Colo., remains in the same position with its successor, the Denver & Salt Lake.

#### OBITUARY.

George B. Francis, M. Am. Soc. C. E., a well known former civil engineer in the railway service, died at his home in New York City, June 9, at the age of 56. He was born at West Hartford, Conn., and was educated at the Hartford High School. He was the first chief engineer of the Boston Terminal Company, and the South station at Boston and the Union station at Providence, were among the most important works carried out by him.

Francis Edward Ward, formerly general manager of the Chicago, Burlington & Quincy, died in Chicago on June 6. Mr. Ward was born July 29, 1867, and was educated at the McGill Model School at Montreal, Que. He began railway work in September, 1881, in the mechanical department of the Grand Trunk at Montreal, remaining with that road until November, 1885, as apprentice clerk and stenographer. In January, 1886, he went to the St. Paul, Minneapolis & Manitoba as secretary to the second vice president at St. Paul, and two years later he became secretary and chief clerk to the president and general manager of the Eastern Railway of Minnesota. Mr. Ward became connected with the Great Northern in January, 1891, and remained with



Francis Edward Ward.

that road for practically 18 years. His first position was that of secretary to the president, and in July, 1894, he was made assistant to the president. From March, 1898, to October of that year, he was general superintendent of the Montana Central, a Great Northern property, and the following month he was made general superintendent of the Great Northern. In 1903 he was promoted to general manager, resigning in October, 1907, to become general manager of the Chicago, Burlington & Quincy lines east of the Missouri river, with headquarters at Chicago. He retired in August, 1912, on account of ill health.

INDO-CYLON RAILWAY.—A. Muirhead, agent of the South Indian Railway, has been to Ceylon to confer with the governor on matters connected with the Indo-Ceylon Railway. He has stated that the Indian section of the Indo-Ceylon Railway would be finished by July next. Though the Ceylon section of the railway is being pushed on as expeditiously as possible, it is believed unlikely that the whole work will be completed before November.



## Equipment and Supplies.

### LOCOMOTIVE BUILDING.

THE CARNEGIE STEEL COMPANY has ordered one 6-wheel switching locomotive from the Baldwin Locomotive Works.

THE UNITED STATES GOVERNMENT has ordered one 4-coupled locomotive from the Baldwin Locomotive Works for the Sandy Hook Proving Ground.

W. R. GRACE & Co. have ordered from the American Locomotive Company one 4-wheel saddle tank locomotive. The dimensions of the cylinders are 9 in. x 14 in. The diameter of the driving wheels will be 30 in., and the total weight in working order 27,000 lbs.

### CAR BUILDING.

THE CHESAPEAKE & OHIO is in the market for 1,000 cars.

### SIGNALING.

#### Signaling for Interurban Lines in Indiana.

The Union Switch & Signal Company has recently taken contracts for the installation of alternating current block signaling in Indiana as follows:

Chicago, Lake Shore & South Bend, Gary to South Bend, 55 miles, single track; 20 passing sidings; semaphore signals, style "B."

Indianapolis, Columbus & Southern Traction, siding No. 6 to siding No. 20, 24 miles, single track. Here semaphore signals will be used at passing sidings and light signals for the intermediate signals, making a total of 26 style "B" one-arm semaphore signals, and 26 light signals.

Louisville & Northern Railway & Lighting Company, Sellersburg to Watson Junction, 3½ miles, single track; four semaphores style "B," and four light signals.

Chicago, South Bend & Northern Indiana, Michigan City to La Porte; 9½ miles, single track, with five passing sidings; signals style "B," one-arm semaphore.

All of the above named roads employ direct current propulsion, with the exception of the Chicago, Lake Shore & South Bend, where 25 cycle alternating current is used. These four contracts cover about 92 miles of track, with 40 passing sidings, and with 160 signals, of which 130 are semaphore type and 30 "light."

TRANSCONTINENTAL RAILWAY, AUSTRALIA.—Preliminary work, including surveys and excavations, is being rapidly pushed forward on the Transcontinental Railway. Beyond a few miles of sidings at Port Augusta and Kalgoorlie, very little has been accomplished in this direction so far. Many appliances and tools as well as material are arriving, among them being two track laying machines and four rail bending machines imported from the United States. A large number of ties is also in the course of preparation. The water required for locomotives, etc., is presenting a difficult problem to the engineers. Arrangements have, however, been made to put down a series of trial borings in the vicinity of Port Augusta, for the purpose of testing the possibilities of artesian water supply.

PASSENGER ALARMS IN VICTORIA.—During the last few years the Victorian railways have been equipping the passenger cars on express trains and on the principal country lines with passenger communication alarms. The apparatus, which is similar in principle to that adopted by the English railways, is operated by means of a chain running through pipes under the roof of the car, with openings opposite to each compartment. The chain is connected to a rod fixed outside one end of the carriage, and when pulled by a passenger it turns the rod and causes the Westinghouse brake to be applied just sufficiently to call the attention of the guard and driver, but not enough to stop the train suddenly. The chain also turns a red disc which is provided outside the end of the carriage to indicate the compartment from which the alarm has been given.

## Supply Trade News.

The Grip Nut Company, Chicago, has moved its general offices from the Old Colony building to 661 and 663 McCormick building, Chicago.

John U. Higinbotham, formerly assistant treasurer of the National Biscuit Company, has been made assistant treasurer of the Detroit Lubricator Company, Detroit, Mich.

The Star Brass Manufacturing Company, Boston, Mass., has opened an office at 6 East Lake street, Chicago. Arthur F. Mundy, western representative, has been made manager of the new office.

The Raymond Concrete Pile Company, New York, has been awarded the contract by the Maryland Steel Company, Sparrow's Point, Md., for the design and construction of reinforced concrete stock bins for its blast furnace at Sparrow's Point.

J. G. Bower has resigned his position as sales manager of the Hale & Kilburn Company, Chicago, to become manager of the New York office of the Buckeye Steel Castings Company, Columbus, Ohio. The New York office of the Buckeye company will soon be opened, but the address is not yet available.

The Quigley Furnace & Foundry Company, Springfield, Mass., has purchased the good will, drawings, patterns and patents of the Rockwell Furnace Company. The Quigley company will make the Rockwell company's full line of furnaces, with the exception of the melting furnaces, portable heaters, rivet forges, etc., which will be marketed by the Monarch Engineering & Manufacturing Company, Baltimore, Md.

The Roberts & Schaefer Company, Chicago, has received a contract from the Denver & Rio Grande to build two large, counterbalanced Holmen type locomotive coaling stations. One will be built at Salida, Colo., and the other at Minturn, Colo. The contract price is approximately \$22,500. This company has also received a contract from the Rock Island Lines for a fire-proof, counterbalanced Holmen type coaling station to be built at Hulbert, Ark. The contract price of this coaling station is approximately \$15,500.

### TRADE PUBLICATIONS.

WATERPROOFING.—The Ceresit Waterproofing Company, Chicago, is distributing a booklet containing numerous illustrations of buildings in all parts of the world on which Ceresit waterproofing has been used. There are also reproduced some letters from engineers from many different countries.

STEEL PAINTS.—"A Test by Technologists" is the title of an illustrated booklet issued by the Lowe Bros. Company of Dayton, Ohio, describing the paint tests on the Havre de Grace bridge of the Pennsylvania, inaugurated in 1906 and now practically completed. In addition to a general statement of the purposes of the test and method of applying the paints, the reports of examinations made by two independent experts are included.

RAILWAY AFFAIRS IN KIUKIANG, CHINA.—The British Acting-Consul at Kiukiang, in his report on the trade of that place for 1912, states that on the Nan-hsün Railway, to connect Nanchang with Kiukiang, trains now run twice daily each way between Kiukiang and Tê-an-Hsien, a distance of some 35 miles, taking about one and three-quarter hours to complete the journey. No further progress in the construction of this line is to be recorded, owing to an entire absence of funds. In July the railway company drew up a loan agreement with the Toa Kogio Kaisha, a Japanese syndicate, for \$2,500,000. Disputes have arisen as to certain terms in the agreement, whereby all contracts were to be in the hands of the syndicate, and as to the mode of paying over the proceeds of the loan. Consequently, only a very small sum has so far been received by the railway company. In the latter part of the year (adds the report) a scheme was published by the provincial government of Kiangsi for the construction of a comprehensive system of trunk railways to cover the province and to connect the capital with important cities in other provinces.

## Railway Construction.

**BUTTE-BOISE-WINNEMUCCA.**—Under this name a company has been incorporated in Idaho with \$40,000,000 capital and surveys are being made, it is said, to build from a point nine miles east of Anaconda, Mont., south to a connection with the Gilmore & Pittsburgh at Armstead, Mont., and using that line to Salmon City, Idaho, thence southwest via Challis, crossing the Sawtooth divide, and via Moore's creek and the Boise river canyon to Boise City, thence through Oregon to Winnemucca, Nev., where connection is to be made with the Western Pacific, about 650 miles. It is understood that the Great Northern is back of the project, and that L. O. Leonard, Boise, has been making surveys for such a line in the interest of the Hill Lines.

**CHARTIERS SOUTHERN.**—An officer writes that contracts for grading and masonry were let on April 21, to Brockelhurst & Potter Co., of Providence, R. I., for the line which is being built from Van Emman on the Charters branch of the Pittsburgh, Cincinnati, Chicago & St. Louis, south by the valley of the Little Charters Creek to its head, and thence by the valley of Big Daniels Run to Mariana, all in Washington county, Pa. The work is not difficult. It is estimated that there will be about 54,000 yds. of excavation per mile and about an equal amount of embankment work. There will be about 28 bridges from 25 to 90 ft. long, and one tunnel 1,300 ft. J. J. Turner, president, and Thos. H. Johnson, chief engineer, Pittsburgh, Pa.

**CHICAGO, BURLINGTON & QUINCY.**—Contract has been let to Yale & Reagan, Chicago, for the grading on a new three mile double track low grade line between Kewanee, Ill., and Galva. This work involves the moving of over 400,000 yds. of earth,

**CHICAGO, MILWAUKEE & ST. PAUL.**—An officer writes that there has been no decision as to building the line from Hutchinson, Minn., to Montevideo, and the present prospects are that nothing will be done.

**CUSHING RAILROAD.**—Incorporated in Oklahoma to build a 12-mile line, it is said, from Cushing, Okla. The right-of-way has been secured, and it is expected that the line will be completed and put in operation this year. P. Arbon, C. R. Perry, Tulsa, and R. C. Jones, of Cushing, are incorporators.

**DULUTH & NORTHERN MINNESOTA.**—An officer writes in regard to the proposed line from Two Harbors to the head of the lakes, that it has been decided not to continue the extension of the main line for the present.

**DIXIE RAILWAY.**—A line is being built by the Dixie Industrial Company, of Benson, Ala., it is said, from Benson north to Alexander City, 15 miles. O. J. Pruitt & Co., Montgomery, Ala., have the contract. W. E. Benson, president and general manager, and D. B. McKenzie, chief engineer, Benson.

**FALLON ELECTRIC.**—An officer writes that residents along the route are grading this line. The plans call for building from Fallon, Nev., east to Stillwater, 13½ miles, and from Fallon south to Harrigan, 5 miles. About 4 miles of grade have been completed. The line will traverse a rich farm section to be opened to homesteaders this fall. C. A. Hascall, president, Fallon.

**GALVESTON, HOUSTON & HENDERSON.**—The directors at a meeting in Galveston, last week, appropriated \$135,000, for improvements, the principal items being new side tracks, of which 10 miles will be laid on Galveston Island and two miles at Texas City Junction.

**GUADALUPE VALLEY TRACTION COMPANY.**—This company has filed its charter with the Secretary of State of Texas. It plans to build an interurban electric road from Austin, via Lockhart and Seguin, to San Antonio, about 100 miles. It is understood that surveys are under way. Directors are W. D. Dunlap and Walter J. Crawford, of Beaumont, Tex.; E. W. Brown of Orange, and J. M. Abbott and J. M. Abbott, Jr., of Seguin.

**SAVANNAH & SOUTHERN.**—This company, which operates the line from Norden, Ga., southwest to Willie, 13 miles, and 4 miles of spur lines, has given a contract, it is said, to build an extension from Norden east to Lanier, about three miles, and work is now under way. (March 28, p. 779.)

## Railway Financial News

**BOSTON & MAINE.**—The directors have passed the quarterly dividends. In 1913 the two quarterly dividends of 1 per cent. each were paid. In 1912 the annual dividend rate was 4 per cent. In 1911 5 per cent. was paid. In 1910, 6 per cent. Dividends have been paid since 1893.

**CHICAGO & EASTERN ILLINOIS.**—The committees formed to protect the interests of the common and preferred stockholders have been consolidated, and this consolidated committee now consists of Alvin W. Krech, chairman, H. H. Porter, W. Emilen Roosevelt, Gordon Abbott, W. Redman Cross, Horace J. Morice and Henry A. Vernet. The election of W. J. Jackson as president is commented on elsewhere, and, in addition to Mr. Jackson, Charles S. Holt, F. A. Hibbert, Chauncey Keep, W. H. Lyford, George H. Porter, H. N. Rose, H. H. Porter, Alvin W. Krech and Henry A. Vernet have been made directors. The *Wall Street Journal* says that the merging of the protective committees insures concerted action of the new owners of the Chicago & Eastern Illinois, and will enable them to secure at least two-thirds and probably a larger percentage of the stock for the cancellation of the contract with the St. Louis & San Francisco.

**CHICAGO, MILWAUKEE & ST. PAUL.**—Clark, Dodge & Co., New York, have bought from the company and are offering to the public \$2,999,500 Puget Sound & Willapa Harbor 5 per cent. 5-year certificates of June 1, 1913-1918 at 98¼, yielding 5.40 per cent. on the investment. These certificates are guaranteed, principal and interest, by the Chicago, Milwaukee & St. Paul and represent ownership of a like amount (total outstanding) of the stock of the Puget Sound & Willapa Harbor. The stock is deposited under a trust agreement, which provides that the St. Paul will buy it at par on June 1, 1918.

**DELAWARE & HUDSON.**—The New York Public Service Commission, Second District, has authorized this company to issue \$2,000,000 first and refund mortgage 4½ per cent. bonds of 1908-1943. The bonds are to be sold at not less than 95, proceeds to be used for additions and betterments.

**NEW YORK CENTRAL & HUDSON RIVER.**—It is understood that up to the present, holders of about \$30,000,000 of the \$90,578,000 New York Central-Lake Shore collateral trust 3½ per cent. bonds have given their consent to the New York Central's consolidation plan and have agreed to take new 4 per cent. bonds to be offered in exchange. The consent of holders of 75 per cent. of these bonds is necessary to make the plan operative.

**NORFOLK SOUTHERN.**—It is said that Fergus Reid will appeal to the Supreme Court of the United States from the decision of the North Carolina courts dismissing his suit against the Norfolk Southern to prevent the issue of \$5,465,000 bonds for the purchase of the Aberdeen & Ashboro, the Raleigh & Southport and the Durham & Charlotte.

**PENNSYLVANIA.**—Kuhn, Loeb & Company, New York, are offering this company's general freight equipment trust gold certificates to the amount of \$19,700,000, the certificates to be issued in about two weeks. These certificates draw interest at the rate of 4½ per cent. and are offered at a price to yield about 5 per cent. on the investment. They mature April 1, each year from 1914 to 1923, inclusive.

**PITTSBURGH & SUSQUEHANNA.**—On June 2, L. T. McFadden, chairman of the bondholders' committee and of the reorganization committee, bought in the property at foreclosure sale for \$50,000. After the reorganization, it is the intention to rehabilitate the property and continue its operation. The road runs from Fernwood to Phillipsburg, Pa., 16 miles.

**RUTLAND RAILROAD.**—T. C. Delavan, John R. Calder and R. L. Shainwald, composing a preferred stockholders' committee of the Rutland, have sent out a circular letter to preferred stockholders asking for the deposit of stock under a stockholders' agreement, and urging minority stockholders to use every effort to get adequate protection from the court in the case of the New Haven being permitted to buy the majority stock from the New York Central & Hudson River or to prevent its purchase entirely.